DOCUMENT RESUME

ED 157 204 95 EA 010 785

TITLE	Educational Opportunity. The Concept, Its Measurement, and Application. Highlights. Sponsored Reports Series.
INSTITUTION	General Research Corp., McLean, Va.; Killalea Associates, Inc., Arlington, Va.; National Center for Education Statistics (DHEW), Washington, D.C.
REPORT NO	NCES-78-201
PUB DATE	78
CONTRACT	300-76-0010
NOTE	71p.; Not available in paper copy due to small print of tables and graphs
EDRS PRICE	MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS	Access to Education; Elementary Secondary Education; *Equal Education; Income; *Measurement Techniques; Resource Allocations; Statistical Analysis; Statistical Data; Tables (Data)

ABSTRACT

Statistical indicators of inequality of educational opportunity developed through this study were applied to 1970 census information concerning school resources and revenues and pupil characteristics to assess the extent of inequality in elementary and secondary schools. Educational equality is defined as the prevailing view that all students should have equal access to the basic educational entitlement represented by a twelve-year elementary and secondary education and that the level of educational resources should not be dependent on the wealth of localities. Indicators to analyze disparities in the distribution of educational resources and revenues were chosen with regard to simplicity of construction, clarity, comprehensiveness, and technical accuracy. The measures of educational resources chosen include (1) current total expenditures per student; (2) expense for teacher salaries; (3) staff per pupil (weighted by degree level); (4) current total expenditures per student with salaries controlled by degree level; (5) current total expenditures per student, with salaries controlled by degree level and adjusted for equality; and (6) a composite of the previous five. Applying the indicators to 1970 data suggests that in 1970, school finance reform was still needed within states to decrease the dependence of resources on local wealth and that improvement in the resource levels of racial, ethnic, and poverty groups would require an interstate solution. (Author/JM)

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Sponsored Reports Series

EDUCATIONAL OPPORTUNITY THE CONCEPT, ITS MEASUREMENT, AND APPLICATION

HIGHLIGHTS

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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"The purpose of the Center shall be to collect and disseminate statistics and other data related to education in the United States and in other nations. The Center shall . . . collect, collate, and, from time to time, report full and complete statistics on the conditions of education in the United States; conduct and publish reports on specialized analyses of the meaning and significance of such statistics; . . . and review and report on education activities in foreign countries."---Section 406(b) of the General Education Provisions Act, as amended (20 U.S.C. 1221e-1).

This report was prepared for the National Center for Education Statistics by General Research Corp. Contract No. 300-76-0010 with the Education Division. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment. This report, therefore, does not necessarily represent positions or policies of the Education Division, and no official endorsement should be inferred.

FOREWORD

This report describes the development of a methodology to provide numerical substance to the concept of educational equality. A variety of approaches are examined. To test concepts, available data bases offering the necessary amount of detail were used. It is hoped that the report contributes both documentation of an inductive approach to the measurement and a demonstration of the usefulness of this methodology in the formulation of policy.

This study was sponsored by the National Center for Education Statistics (NCES) under a contract with General Research Corporation (GRC) and a subcontract with Killalea Associates, Incorporated. George E. Pugh served as Project Director and developed the conceptual foundation and the analysis plan. J. Neil Killalea acted as Assistant Project Director. Bruce Loatman of Killalea Associates expanded and executed the analysis plan, and developed the computer system. Other participants in the project were Robert J. Eckert, Joseph M. Firestone, and Lawrence Goldberg of GRC; and W.E. Andrews and Stephen H. Hodgin of Killalea Associates.

The NCES Project Officer was the late Dr. William Dorfman who recognized the need for the development of an indicator of educational equality. Dr. Dorfman guided the effort and made the review process a means of communicating its underlying concepts. Many individuals in the Center and in other agencies of the Department of Health, Education, and Welfare were very helpful in discussions held early in the study and in reviewing draft versions of this report.

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I INTRODUCTION AND SUMMARY

The study reported here was conducted principally to develop statistical indicators of inequality of educational opportunity and secondarily to apply them to the 1970 Census/ELSEGIS data file to assess the extent of inequality in the elementary and secondary schools in the United States.

Present governmental concern with equality of educational opportunity as a policy goal reflects the recent history of Federal and State actions to eliminate bias and to assure delivery of reasonably similar education programs throughout the Nation, particularly for groups that historically have been deprived. Section II reviews some of the highlights of that history.

To be able to measure inequalities in educational opportunity, it is first necessary to have a clear definition of what we mean by the concept of equality. Simple, intuitively clear definitions often fail to stand up under analysis. For example, the concept of equality that would deliver resources so as to maximize each child's potential is laudable – but it is unrealistic, since it takes no account of the practical limits on the funds available for education. Under a more practical definition, equity is best served if each individual is provided resources that strike an appropriate balance between the personal and social benefits and the personal and social costs. These ideas, which are developed in more detail in Section III, suggest that our measurement of inequalities in educational opportunity requires indicators of both resources and benefits and a method for relating them.

Unfortunately, our ability to measure benefits is very limited, and principal attention in indicator development must be concentrated on the resources applied to education. The indicators developed in this study are so restricted.

Indicators of Resource Disparities

This study was designed to produce and demonstrate indicators that could be used to analyze disparities in the distribution of educational resources across school districts in the Nation, in geographic regions, and in the States. Two methodological questions had to be answered in the effort. First, how should educational resources be measured; and, second, against what standard are actual resource levels to be compared?

Six measures of educational resources were developed and tested, all reflecting different degrees of emphasis on the various priorities discussed in Section IV: simplicity of construction, intuitive clarity, comprehensiveness of resources covered, and technical accuracy. As one example, the simplest measure, termed M1, counts dollars per pupil of current operating expenditures, less transportation; this measure is simple to construct and understand, and it encompasses a large proportion of educational resources. But it is inaccurate, since it fails to account for the difference in real resources purchased by dollars in different localities. Another counts simply teachers per pupil. Another counts all professional instructional staff and also weights the staff according to their degree level. The best balance among all the priorities seems to be provided by a measure, termed M4, that employs current operating expenditures, less transportation, as in M1, but it incorporates an adjustment intended to account for the differences among school districts in the cost of acquiring equivalent education resources. The adjustment replaces the reported expenditures for instructional staff by the expenditures that would have been made if the district had paid the national average salary for staff at the same degree level. M4 produces results that are only slightly different from those of the most complex measure constructed and tested in the study.

The study also examined the distribution of revenues across school districts. Expenditures, used in the resource measures described above, cannot readily be divided by their sources: local, State, and Federal. An analysis of the separate effects of Federal and State efforts in equalization therefore requires consideration of revenues.

The second task is to select a standard for

comparison. There is no absolute standard of adequacy of service, and therefore the study developed norms based on average levels of resources and revenues. Two averages were calculated, a national average across all the States and an average for each State. In this way, a particular school district could be evaluated by how it ranked with respect to all other districts in the Nation or only with respect to all other districts in its State.

Within this general approach, it is possible to treat the several special-need populations in either of two ways. One is to adjust the norm for each measure to reflect the special education needs of various student populations (to the extent that districts differ in the proportion of children with such needs). This would require both identifying the pupils with special needs and stipulating the level of resources deemed appropriate to them, both of which are issues on which it is very difficult to obtain agreement. Another approach, followed in the present study, is to measure resources per pupil without regard to where the special-need populations are or to where there may be special programs for them, and then to present disparities across districts characterized by concentrations of several groups that are either generally considered disadvantaged or for which the Federal Government has traditionally exhibited concern.

Two adjustments were made, however, for special needs in the development of the norm. The first allows for the traditionally somewhat higher resource levels in secondary schools. The second allows for the higher resource levels that were observed in very small and very large districts. The study assumes in effect that these differences are not the result of bias but are related to economies and diseconomies of scale. (The higher spending levels in the largest districts may also be due, at least in part, to higher concentrations of needy pupils.) Because the size adjustment is less clearly justified than the grade-level adjustment, the study presents correlations of size with various socioeconomic factors so that the reader may judge the effects of the adjustment on the results.

Results are presented in terms of scores for resources provided and revenues received. Each district is assigned a resources score, calculated as the ratio of the actual resources provided in the district to the national norm for districts of the same size range and grade-level coverage. In addition, districts are assigned scores on each of five revenue variables; local, State, local plus State, Federal, and total revenue. In the revenue analysis no adjustments were made for size or grade level.

The analysis is carried out in two ways – first, by measuring variations in resources and revenues across States, regions, and the Nation; and second, by correlating these variations with district socioeconomic characteristics. The socioeconomic variables selected were: ability to pay, financial effort exerted for education, proportion of persons in poverty families, proportion of black population, proportion of Spanish-language population, degree of urbanization, attendance rate, and enrollment (the last as a check on the adequacy of the size adjustment).

Assessment

When districts are compared to a national norm, the 10 percent of pupils receiving the most resources received 1.95 times the resources available to the 10 percent of pupils receiving the least. If districts are compared only with others in their State, the ratio reduces to 1.52. About half the variation in resources is due to variations within States, and the other half to variation among States. These results reflect less disparity in the distribution of resources than is often thought. Part of the difference lies in the fact that variations due to size of school district are adjusted out of the disparity calculation; to the extent that this adjustment is regarded as not justified, the perceived inequality is greater.

Revenues, as contrasted with resources, exhibit much greater variation. On the national comparison, the 10 percent of pupils receiving the most revenues receive 2.81 times the revenues available to the 10 percent of pupils receiving the least. When districts are compared on a within-State basis only, the ratio is 1.75. These ratios are higher than the corresponding ratios for the analysis of resources; the reason is that revenues were not adjusted for size or grade level, as were resources. As expected, State and Federal revenues contribute to the reduction of disparities, with State revenues having a far larger effect due chiefly to their magnitude in absolute dollars. The remaining variation is most strongly correlated with financial effort and with wealth. This is so when the comparison is national and when it is within-State. That is, for example, a district may be at the low end of the revenue scale (per pupil) because it is less able to support education than other districts in its State or because it is in a State that has less wealth than other States.

There was little variation in 1970 in per-pupil

resources or revenues among districts of varying percentages of minority populations. Indeed, districts with large concentrations of minority pupils tend to receive slightly more resources and revenues than their State average. Some districts with concentrations of minority pupils do receive much lower resource levels than the national average, but when this occurs it can often be traced to the fact that such districts are in States with low resource levels relative to the national norm.

The analysis of districts that vary in the proportion of poverty in their populations gives results that are somewhat similar to those found in the analysis of districts with minority populations. That is, on the national comparison, most of the resource disparities for districts with high concentrations of poverty populations can be traced to disparities in the resource levels among the States – although, in contrast to the situation for districts with high proportions of minority populations, some disparity remained within States.

Thus, the largest within-State disparities in 1970 seem to reflect differences in wealth (or ability to pay), rather than in the proportions of racial, ethnic, and poverty groups. This suggests in turn that, in 1970, school finance reform was still needed within States to decrease the dependence of resources on local wealth, but that improvement in the resource levels of racial, ethnic, or poverty groups remained an interstate problem.

II BACKGROUND

Americans seem to hold more truths self-evident about education than about any other sphere of public life. It is almost universally agreed, for instance, that education is the keystone to a successful society, and that a good education is essential for an individual's well-being and individual progress. Yet, rooted in this general belief are two directly conflicting views. One, an expression of the ultimate individualism of the American citizen, is that parents have the right to provide as much education to their children as they can afford. The other, an expression of the interdependence of all elements of society, is that all children should have an equal access to a meaningful education.

The structure of the system set up to administer American education mirrors this conflict. The States are constitutionally responsible for education but pass the burden of administering most kinds of educational programs to sub-State levels, presumably to benefit from advantages that derive from proximity of decisionmaking to the place where services are actually delivered. If this advantage is to be attained, an individual school system must be permitted to be different from others. But this provision is one seed of potential inequality. The United States Constitution carves out for the Federal Government no explicit role in education and no place for a Federal interest; but such interest does take place, both through new legislation and through the guarantees of equal treatment afforded by the Federal Constitution and the judicial system that interprets it. The local school system thus generally reflects the individualistic view, and the Federal level serves as a reminder of our interdependence, while the States hover in between, often varying the direction in which they lean. Thus, the tensions built into the system by which education is conducted could at any time give rise to a concern for questions of equity.

But these are not ordinary times, and an assessment of the condition of equal educational opportunity is needed for more than the usual reasons. Theoreticians, parents, educators, students, and the courts of the States and of the Nation have put in question the very roots and structure of American education. Its techniques, its financing system, its effectiveness, and even its goals are being subjected to more searching criticism than ever before, criticisms that in many instances find their origin in an unprecedented Federal concern for equality, but that in others are counter-reactions reflecting disenchantment with the emphasis on interdependence. As a preface to our search for better ways of assessing the condition of the equality of educational opportunity, we need to consider some of the milestones in recent history that seem to be leading to a complete reassessment of traditional concepts.

Whatever other legislative or judicial protection a racial minority may have at the State or local level, the Federal Government has, in practice, taken responsibility for correction of inequalities or discrimination. In education, children may not be discriminated against because of their race or other identifiable characteristic. *Plessy v. Ferguson* permitted racially segregated facilities as long as they were of quality equal to those used by majority students. Sixty years later *Brown* found that racially segregated facilities were inherently unequal – a radical reversal in what we mean by "equal quality" or "equality." We note here that the equality being addressed is one of access – the ability to be exposed to the same rather than "equivalent" facilities and services.

Children must not receive unequal education opportunities because they reside in a district that lacks the wealth required to provide sufficient taxes for education. The Serrano ruling in California did not require exact equality in expenditures, although it did place a limit on the permissible disparities in per-pupil expenditures from one locality to another. More important, it required that the State not permit the quality of a child's education to be "a function of the wealth of his parents and neighbors," meaning a function of the wealth of a locality in the State rather than the wealth of the State as a whole. This ruling and others that have similar effects do not

invalidate the method by which districts collect funds for education, which is primarily the property tax; rather, they require that the States do something about the source of inequalities: differentials in the taxable property base.

In *Serrano* and similar State court decisions, it is clear that children are not the only population against whom the dependence on property taxation discriminates. Parents and other people are also affected as taxpayers. If a relatively property-poor district is to attain a respectable level of education for its children and must do so on its own resources, all taxpayers suffer – they all pay a larger share of their income for education, proportionately, than those in wealthier districts, and even then they are usually unable to attain a comparable level of expenditures. This differential in the educational services that can be bought for an equivalent effort leads to some anomalies. A family with relatively low income that happens to reside in a locality with high taxable property base can "afford" high levels of expenditures for education; being poor is not as bad in a wealthy district as in a poor district. A family with average or higher income that lives in a district with low property wealth obtains much lower levels of education expenditures, so that being better off personally is no assurance of being better off in terms of educational resources. The wealthy family has the best of it: to live in a property-poor district but to send its children to private school, or to live in a wealthier district and retain the option of obtaining an enriched public schooling.

Clearly, localities themselves cannot solve this problem – more precisely, the poor localities cannot and the rich localities will not. The States are therefore responsible for such interdistrict equalization as is required. Concern has been expressed that this thrust, in lessening the role of the local school district in financing, will inevitably weaken local control over the education program itself. Some argue that freeing local boards from fiscal decisions enables them to devote more time and energy to the more important decisions regarding how best to apply the funds to education. Others argue that the attempt to obtain uniformity of expenditures can lead either to a retreat to private schooling, which leaves the public school system in even worse condition, or to extensive private supplementation of educational programs which, of course, also discriminates against the poor. Still others point out that some reform mechanisms, such as power equalization, maintain local fiscal autonomy while equalizing access to funds. In all these ways, the basic conflict between individual self-determination and group interests is met on issues of education taxation.

Considerable inequalities in educational offerings arise not only between districts in a State but also between States. Just as within a State the poor districts cannot and the rich districts will not correct the situation themselves, a State will not by itself act to improve the condition of other States; only the Federal Government is in position to put into place the actions that would be required to equalize educational opportunities nationwide. Clearly, this kind of problem offers challenges to analysts, since it requires, in order to be addressed properly, a consideration of the differentials in educational costs in different States or regions of the country. It offers an even greater challenge to policymakers at the Federal level, because it is only there that, after each State has done the best it can do or is willing to do, any change can be put in motion to equalize educational opportunities throughout the Nation.

Either within a State or between States, perhaps the most difficult problem is the level of resources required. It is important to ask not only whether or not the children in a district are receiving equitable educational resources relative to those in other districts in their State or in other States, but also whether the children are receiving an adequate education – implying an absolute, rather than merely a relative, measure. It may be too much to require that children throughout the Nation should receive the same degree (quality) of education. But it is surely not too much to ask that all children receive an adequate education. It is, of course, beyond the scope of the present study to inquire into what constitutes an adequate education; but an inquiry into equality of education opportunity would be of no value if it neglected to recognize that equalizing at a level below adequacy is an empty advance indeed.

Children should not receive inferior educational opportunities solely because of the geographic nature of the school district in which they reside, such as a city or rural area. It is asserted that many cities face a form of inequality that arises from special circumstances not occurring elsewhere. First, the concentrations of children needing special education are greater, often much greater, than in other school districts. Any State equalization program based solely or primarily on low property wealth per pupil is going to fail to give extra assistance to cities, most of which have relatively high property values per pupil. Equalization formulas must accordingly incorporate a

factor to account for variations between districts in the extent of their need. Moreover, it is argued that cities must provide, not only for their citizens but also for visitors and commuters, services in greater breadth and intensity than most other districts, even when the comparison is made on a per-capita basis. To some extent, this burden can be supported locally by taxing the institutions, such as office buildings, that give rise to the need for the added services.

Children should not be provided inferior educational opportunity because the school they attend receives lower levels of resources than other schools in the same district. This problem of intradistrict inequality has traditionally been left to local discretion and control, but the comparability standards established to enforce the Federal Government's ESEA Title I are an exception. The leverage exerted in enforcing comparability as a requisite for receipt or continuance of Federal funding may be one of the primary forces holding down intradistrict inequities. *Hobson v. Hansen*, which required the District of Columbia to equalize resources among its schools, reflects the interests of the courts in this arena of inequality.

In the equality contexts discussed thus far, inequality is perceived as inputs of resources unequally applied to the detriment of the children affected, and the corrective action is solely to equalize resources. This is not to say that there is no concern for the effectiveness of the resources in producing desirable outcomes, but whether or not the results do in fact bear out our expectations is treated as a matter of educational technique rather than one of equity. In other contexts of equality, outcomes become a dominant concern.

Children should not receive inferior education because of past and present poverty and all that poverty creates – by inadequate nutrition, crowded housing, and lessened interest in and appreciation of learning. Even if such a child is not discriminated against in the receipt of equal access and equal services, he may nonetheless be at a disadvantage in learning. He may even attend a "good" school, after having been bused, rather than in the school in his residential neighborhood. But the same educational services that benefit his advantaged schoolmates may pass the disadvantaged child by without significant effect.

The concept of an education program to compensate for educational disadvantage places a radically different interpretation on the meaning of equality of educational opportunity, and creates new problems in its measurement. The aim is not to equalize inputs but to differentiate them in order to equalize opportunity. But, after all, the only thing the educational process can control directly is the resources it applies and, therefore, the problem is to determine the amounts and kinds of differential resources that will produce the desired outcome. As difficult as it is to assess the effectiveness of educational resources generally, it is tremendously more difficult to assess the effectiveness of resources applied in an innovative way to disadvantaged children. But there is an even more basic problem: there is no clear agreement on what is meant by educational disadvantage – agreement that can be converted operationally into a targeting that reflects the agreed definition. At the Federal level, where the major thrust in compensatory education began 10 years ago with the Elementary and Secondary Education Act of 1965, the definition of disadvantage remains a central and continuing controversy. By now, a number of States have instituted their own programs with similar intent but with still different concepts of targeting. Some programs target funds on children who score low on achievement tests, while other target funds on children from economically disadvantaged homes; the two groups overlap but are by no means identical. The Federal Interagency Committee on Education is currently attempting to obtain a better measure of the number of disadvantaged children along several dimensions – income, race, language, handicap, and family characteristics. Until the basic issues of definition and targeting are resolved, there can be no one indicator of the extent to which inequalities brought about by disadvantage exist or are being lessened by compensatory resources.

Children should not receive inferior educational opportunity because they cannot understand the language in which the education is offered. Until recently, the push toward greater understanding of the needs of children whose language and cultural background differ from that of the majority has been provided by the Federal Government, again through ESEA. In *Lau*, however, a new requirement arises: a school district may not effectively deny such children a meaningful education by providing them instruction in a language they do not understand. Each State and locality must now provide programs of language assistance wherever there are concentrations of children suffering from this disadvantage. The Federal Government must now monitor compliance with the new requirements, and an essential foundation for that monitoring is a workable definition of the level

and kinds of resources that will be considered as offering equality of educational opportunity for these children.

Children should not receive inferior education, let alone be excluded from participation in the educational process entirely, merely because they bear a mental or physical handicap that makes learning difficult or that requires a different approach or environment for the effective delivery of educational services. Again, although most States provide some education for handicapped children, it is not uncommon for school districts to claim an inability to render service to them at all. In *Mills v. Board of Education of the District of Columbia*, the court ruled that a handicapped child may not be excluded from a regular public school assignment unless the child is provided adequate alternative services. The exclusion of a child from school entirely is different from the relative neglect suffered when the child sits in a classroom where the regular educational offering passes him by. The Federal Government, with enactment of the Education for All Handicapped Children Act, now requires the States to provide for each handicapped child an education program designed to meet his or her needs. Just how this requirement is to be carried out is a thorny problem, made more difficult by the fact that the services that are intended to equip the child to operate effectively in society may be delivered in a fashion that isolates the child from the mainstream of the education program.

Finally, as a sobering backdrop to this entire discussion, some studies have questioned the central issue in any analysis of equity, claiming that schooling is not very important in changing things. As Jencks says, "Neither family background, cognitive skills, educational attainment, nor occupational status explains much of the variation in men's incomes."* If this is so, then people are bound to be unequal in life after school regardless of how well the Nation does in approaching equality of educational opportunity. Two comments must be lodged relative to the view of the educational pessimists. Even if it is true that removing inequalities in educational opportunity will buy little in changing life, inequalities of certain kinds should be removed in any event. If, for instance, an individual is discriminated against, the elimination of discrimination may be justified solely on constitutional grounds and does not require a proof that greater resources will increase educational or occupational outcomes. Moreover, it appears from more recent and more careful studies that the announcement of the death of education was premature and that there now are, in fact, good reasons to believe what many people would have believed – that education can change people.**

This review serves to remind us that the American concept of equality of educational opportunity is a complex concept. It is concerned with a great variety of difficult problems, to which the national system has reacted through a continuing process of change in education policies and programs. There is a clear need for unifying concepts that can provide a consistent direction for the evaluation of policy dealing with the goal of equality of educational opportunity.

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*Jencks, C., *et al., Inequality: A Reassessment of the Effects of Family and Schooling in America*, New York: Basic Books, 1972.

**Hill, C. R., *Education and Earnings: A Review of the Evidence*, Office of the Assistant Secretary for Planning and Evaluation, Department of Health, Education, and Welfare, May 1976.

III THE CONCEPT OF EQUALITY OF EDUCATIONAL OPPORTUNITY

The concept of "equality of educational opportunity" represents a broad social ideal that can never be perfectly achieved in any real educational program. As was illustrated in the previous section, the prevailing practical interpretation of the concept does not appear to be static. It seems instead to be a dynamic concept which is gradually evolving – perhaps toward some more comprehensive and idealized interpretation.

The dynamic nature of our concept of "equality of educational opportunity" poses some serious problems for the development of indicators; for in order to measure deviations from "equality" it is essential that we have a clear and unambiguous definition of what we mean by the concept. We need a quantitative standard or frame of reference from which the deviations from "equality" are to be measured. In fact there appear to be several different levels of such a standard that are relevant.

At the lowest level we can ask whether existing educational programs as now defined by local, State, and Federal law are being administered without bias or discrimination, so that all individuals have an equal opportunity to benefit from the programs as they are defined by existing laws. If this were the only criterion of "equality," however, there would be no way of determining whether the existing laws and regulations are properly designed to provide real equality of educational opportunity for all types and geographic groups of students. Thus there is a need for a higher standard that can be used to evaluate the fairness and equity of the existing educational programs.

At any given time there is a prevailing popular interpretation of the ideal of "equality of educational opportunity," and as a practical matter this prevailing concept provides the standard against which existing programs are judged. Since this prevailing practical concept is always ambiguous and poorly defined, it is difficult to obtain agreement on a definition of the concept. Moreover, this prevailing popular interpretation is subject to continuous change in response to changes in our understanding of educational needs as well as changes in our sensitivity to some of the ethical and moral issues. For these reasons the prevailing popular interpretation does not provide a very useful foundation for the development of quantitative indicators.

There are indications, however, that these changes in the prevailing practical interpretation may be guided by some kind of ultimate or timeless version of the American educational ideal. Although this timeless or ultimate ideal is not clearly perceived and is rarely verbalized, it nevertheless exists as a vaguely defined mental construct which influences the development of our practical ideal. As changes occur either in our understanding of the educational procedures, or in our ability to provide more effective administrative procedures, the prevailing practical interpretation tends to evolve to bring it into a closer correspondence with this ultimate ideal. Thus the concept of equality of educational opportunity seems to exist at three separate levels.

1. A vaguely defined but timeless concept which guides the evolution of the popular ideal.

2. The popular ideal, a somewhat ambiguous and changing concept that provides the practical standard against which existing laws and programs are judged.

3. The existing laws and programs that provide the concrete standard against which actual administrative practice is judged.

To clarify the overall concept of equality of educational opportunity we will proceed from the top down. The first objective therefore is to try to clarify the timeless concept of equality of educational opportunity that seems to guide the evolution of our practical ideas. Once this has been developed it should be easier to understand and evaluate the prevailing ideal as well as existing educational policy as a pragmatic approximation of the timeless ideal.

Since our objective is to clarify an ultimate policy objective, we cannot rely on a dictionary definition or a semantic analysis of the meaning of equality of

educational opportunity, for there is no assurance that the resulting definition would correspond to appropriate policy objectives. A satisfactory policy-oriented definition must be compatible with the goals we normally pursue in the name of equality of educational opportunity. For this reason, we will examine critically the policy implications of different definitions, and ask what definition produces the best correspondence – both with our intuitive definitions and with the objectives of existing programs that are designed to improve "equality of educational opportunity."

Problems with Simple Definitions

The most commonly suggested intuitive definitions tend to focus either on equality of educational achievement or equality in per-pupil educational resources. It is easy to show that neither of these simple ideas can provide an acceptable quantitative guide for educational policy.

The simple criterion of equality of educational achievement is obviously unrealistic. Because of wide differences in individual motivation and ability, the equalization of achievement is simply infeasible even at unacceptably low levels of achievement.

The second concept, equality in per-pupil educational resources, seems somewhat more practical and has a better correspondence with the way educational policy is actually implemented. Still, it fails to accord with the view that some children need *more* than an average share of educational resources to achieve equality of educational opportunity. This view is reflected explicitly in a number of programs.

Indeed, the problem is even more complex than one might expect on the basis of the preceding example. Whereas those examples were all concerned with special aid to compensate for various types of disadvantages, our overall educational policies (which encompass State and local efforts and extend beyond just elementary and secondary education) include a variety of programs such as scholarships, State subsidies for higher education, and special education for gifted children, which deliberately provide extra resources for various kinds of promising or above average students. Although these programs have not usually been justified on the basis of equality of opportunity, they are generally not considered to be in conflict with the concept of equality of opportunity.

Apparently, an adequate definition of equality of educational opportunity must somehow be compatible with individual variations in treatment according to educational need. This suggests, as a third alternative, that the goal of an equal opportunity program may be to provide for each individual an educational experience that maximizes individual potential. If this were our objective, it would help to explain the requirement to tailor education to the specific needs of individuals. As stated, however, the definition overlooks the costs of providing the education. It seems to imply that each individual must be provided with the best possible educational experience without regard to the burdens placed on society and without regard to other national needs. Our intuitive idea of equality of opportunity does not seem to imply such an unlimited or absolute goal. Indeed, when the entire society is considered, it is clear that the benefits of education for any individual can be seriously degraded if the burden of providing education for certain others is too great. If we are to develop a satisfactory definition, it seems that we must consider both costs and benefits of education.

Definition of an "Ideal" Educational Policy

It appears that if we are to develop a satisfactory interpretation of the concept of equality of educational opportunity, it will be necessary to develop the concept within the context of the broader social objectives of educational policy. What would we consider to be an ideal educational policy? How would such a policy provide for equality of opportunity? It seems possible that if we can define what we would mean by an ideal educational policy it will provide some insight with regard to an ideal or ultimate concept of equality of educational opportunity.

In an ideal educational program the education provided should be tailored as accurately as possible to the specific educational needs of each individual. Such an ideal educational program should also provide a proper balance between the social costs and the social benefits of the educational program. The allocation of educational resources should be such as to provide an "optimum" level of education for each individual. In accordance with economic theory, this means that educational resources should be provided so that each individual could be educated up to a point of diminishing returns, where the incremental costs of additional education would begin to exceed the incremental benefits to the individual *and* to the society that could be expected from the additional

education. This definition of an "optimum" level of education for each individual in terms of an economic balance between costs and benefits provides a more realistic definition of the objective of educational policy which considers the costs as well as the benefits of education. It is important to emphasize, however, that the benefits and costs that are involved concern human values, and they cannot be properly measured in financial units.

Because of the wide differences between individuals in their motivation and educational aptitude, such an ideal individualized educational policy might involve rather substantial differences in the education resources provided for each individual. The way resources in such an idealized educational program would vary depending on factors such as motivation and educational aptitude will be discussed in some detail later, where it will be shown how many of our existing programs, such as ESEA Title I and bilingual education that are designed to help equalize educational opportunity, can be explained in terms of this idealized model.

All of the variations in the resources provided by such an idealized program would depend only on educationally relevant factors such as the relationship between educational costs and benefits; it would not make any distinctions in terms of factors such as ethnic background, wealth, race, or social status, which according to this idealized concept are educationally irrelevant. Consequently, such a program would provide complete equality of educational opportunity. The idealized program would also be as efficient as possible in the use of educational resources. Although actual educational programs can never achieve such an ideal, we believe that this idealized concept of an educational policy which is both fair and efficient provides the best representation of the ultimate educational ideal which we refer to as equality of educational opportunity.

Obviously, practical educational programs can never reach such an ideal objective. There are practical limits in the extent to which programs can be tailored to meet the specific needs of each individual, and moreoever, it is very difficult to estimate the real social benefits or even the social costs of additional education. There may also be practical limitations in the extent to which it may be feasible or desirable to eliminate the effects of wealth on opportunity. Inevitably, therefore, real educational programs will fall short of the ideal, both in efficiency and in equity. When we are concerned with equality of educational opportunity, our focus is on the fairness, equity, and justice of our implementation of the educational policy rather than on the overall effectiveness and efficiency of the programs.

Although the idealized educational policy, as stated previously, is itself fundamentally free of bias, continuous vigilance is necessary to ensure that bias does not enter either inadvertently or deliberately in our implementation of the policy. In practice, programs can fall short of the goal of equality of educational opportunity either because they fail to recognize and provide for special educational needs, or because they discriminate unfairly on the basis of criteria such as race or ethnic background that have nothing, *per se*, to do with educational needs. Because equity and justice are themselves very important social values, a higher priority must be attached to these issues than might otherwise seem to be indicated if we were interested only in the "efficiency" of the educational programs with regard to other social objectives.

Clarification of the "Ideal" Policy

Our purpose in this section is to clarify this "ideal" so that it will be possible to demonstrate the compatibility of the concept both with our intuitive ideas of equality of educational opportunity, and with the variety of educational programs that are now sponsored in the name of equality of opportunity.

The goals of education are both personal and social. From the personal perspective, the objective is to help each individual realize his intellectual potential so that he will be as effective as possible in the achievement of a satisfying personal life. From the social perspective, the objective is to equip each individual to be a useful citizen and to prepare him to contribute as effectively as possible to the general welfare of society. Thus, the goals of educational policy are concerned both with benefits to the individual and with benefits to society. But, as noted previously, education programs also compete with other programs for available resources and they consume time and energy of the individual that could be applied to other activities. Therefore, the ultimate objective of educational policy has to be to maximize the net benefit of the educational programs when both the benefits and the costs are considered.

To show how these relationships interact to determine an ideal level of educational resources for each individual, it is necessary to distinguish between the individual, as opposed to social, benefits of

education. Since we are concerned with benefits and costs of education as measured in terms of human values, it is apparent that all of the costs and all of the benefits will ultimately be realized by the individuals in society in the satisfaction of their life experience. However, when we are considering educational alternatives for a single individual, it is helpful to divide the costs and the benefits into two parts: those that will be realized by the individual within his own life experience, and those that may be realized by other individuals within the society as a consequence of contributions the individual is likely to make either for or against the general social welfare. (These contributions can be simply through normal social interactions or through more formal contributions to the social welfare.) Strictly speaking, both the individual and social benefits will be influenced by the degree of equity or justice of the educational program – for equity and justice are themselves important human values. But for the present discussion these equity considerations are omitted from the "benefits" that are considered in the initial analysis of the problem. The effect of equity on the value judgments (sometimes referred to as merit goods) will be considered later.

To make the cost/benefit relationships more quantitative, it is helpful to introduce a few simple ideas from economic theory which can help in displaying optimal relationships between benefits and costs. If we were to consider all of the ways we might proceed with the education of a particular individual, we would find that each alternative would generate some expected level of net personal benefits, plus social benefits; and it would also involve some consumption of educational resources. In principle, therefore, it should be possible to plot each alternative as a point on a graph where the vertical scale corresponds to the benefits produced, and the horizontal scale corresponds to the educational resources required.

Obviously, in practice it is very difficult to be quantitative about such a plot because many different kinds of benefits are involved, and different individuals will disagree about the relative importance of the different kinds of costs and benefits. Moreover, because of uncertainty about how the individual might respond to different educational approaches, there is a great deal of uncertainty concerning the educational outcomes. However, if we were to consider the problem carefully, making reasonable judgments about the probable results, we might be able to produce a chart similar to the illustrative one in Figure 1. The chart is of course completely hypothetical; its only purpose is to illustrate some very general principles involved in selecting an alternative that provides a good balance between costs and benefits. Each of the dots shown represents the estimated outcome in terms of resources consumed and educational benefits for a different educational approach. The social costs for the alternatives tend to be proportional to the educational resources consumed, so these are indicated by the line labeled "social cost." If we wish to find the "best" educational alternative, we should look for the one which provides the greatest excess of benefits over costs. Thus, we should look for the alternative which is highest above the cost line. This point is circled in the figure, and the dotted line indicates the amount of benefits in excess of cost that it provides.

The figure also illustrates some other important characteristics of the problem. Some of the alternatives are simply inefficient, since it is possible to provide greater benefits at lower cost by some other method. But there are efficient alternatives which provide the best possible benefit for a given level of educational resources. These alternatives define an upper envelope of the feasible alternatives. The efficient alternatives that fall on this upper envelope show that greater educational benefits can be realized if we are willing to expend more educational resources. But the obtainable benefits usually follow a law of diminishing returns. As more resources are expended, the incremental benefits per unit of additional resources tend to decrease. Thus, the slope of the envelope decreases so that at high resource levels the incremental costs tend to exceed the

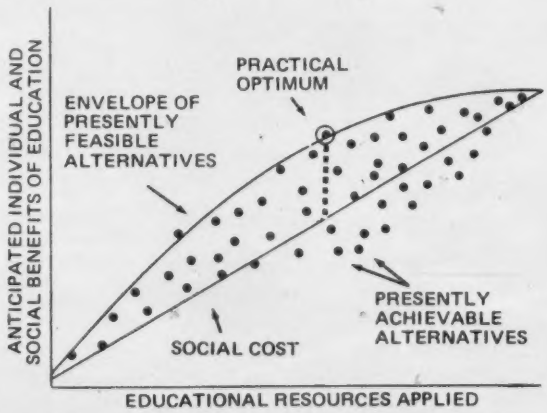


Figure 1. Relation of Educational Resources and Benefits.

incremental benefits of additional education. The optimum alternative occurs where the two slopes are about equal so that the incremental costs and benefits are about equal.

If we were able to select an educational program for each individual in this ideal way we would produce the best possible relationship between educational costs and educational benefits. Such a program would be ideally efficient in terms of the objectives of educational policy. It also would be completely fair and unbiased since all decisions are to be made *solely* in terms of educational costs and benefits, and each individual is offered exactly the same "educational opportunity."

Practical Implications of the "Ideal" Policy

As noted previously, there are a number of practical considerations that make it infeasible or impractical for actual educational programs to provide more than a very rough approximation to the ideal. It is obviously not practical to really tailor the educational programs to the needs of each individual. The curriculum must be designed to work effectively for a wide range of students. Moreover, it is not possible to predict either the costs or benefits of educational alternatives for individuals with enough accuracy to justify much adjustment of the basic programs to meet individualized needs. These practical limitations are reflected both in our existing educational programs and in our prevailing popular concepts of the educational ideal.

Because of these limitations, basic educational policy in the United States is built around a very simple pragmatic approximation to the ideal educational concept. A basic level of educational services is defined that is judged to be about right for the typical student. This basic education, which corresponds to a normal public school education (elementary, junior high, and high school) is treated as a fundamental educational "entitlement." Obviously, this standard 12-year education cannot exactly match the optimum level for all students. For some students it is too much, for others it is too little. In the interest of simplicity and uniformity within the program, however, such minor departures from optimum are tolerated when they do not interfere seriously with the fairness or efficiency of the program.

In specific cases where this basic educational program would fall far short of the ideal, special educational programs are provided to correct the problem. Many existing special education programs can be understood as pragmatic efforts to correct deficiencies that would arise if public educational programs were limited solely to the basic educational entitlement. Figure 2 illustrates how the same basic policy principle based on the balance of costs and benefits can dictate special aid not only for students with learning disadvantages but also for students with above average ability.

The example in the upper left illustrates the relationship between benefits and educational resources for an average student. The total benefits (solid line) are equal to the sum of the social benefits (below the dotted line) and the net individual benefits (above the dotted line).* When these total benefits are compared with the social cost, a level a of educational resources is defined which is optimum for the typical individual. Presumably this level of educational resources corresponds to the standard (approximately 12-year) educational entitlement. This same level of resources is provided routinely for all students who are approximately average or normal in their educational needs. There are certain students and groups of students who have clearly identifiable and special educational needs, however. Let us consider how these special needs can influence the optimal or ideal level of educational resources required.

The graph in the lower left of the figure illustrates the relationship for a student who is educationally disadvantaged, either because of a language handicap or some other initial barrier to learning that must be corrected to allow learning to proceed at a normal pace. Under the assumption that these individuals are essentially normal, except for the initial learning barrier, the illustrative educational benefit curve shown in this case is exactly the same as for the average student shown above, except that an additional increment c of educational resources is required to correct the initial learning barrier. Consequently the benefit curve is simply shifted to the right by an amount c. Because the curve has the same slope as before, the optimum occurs at the same point on the curve as for the average student except for the additional increment c of resources that is required to correct the initial learning barrier.

This example corresponds rather closely to the rationale that is used to justify certain special

*By "net" individual benefits we mean to refer to the individual benefits in excess of any disadvantages that accrue to the individual as a result of the educational experience.

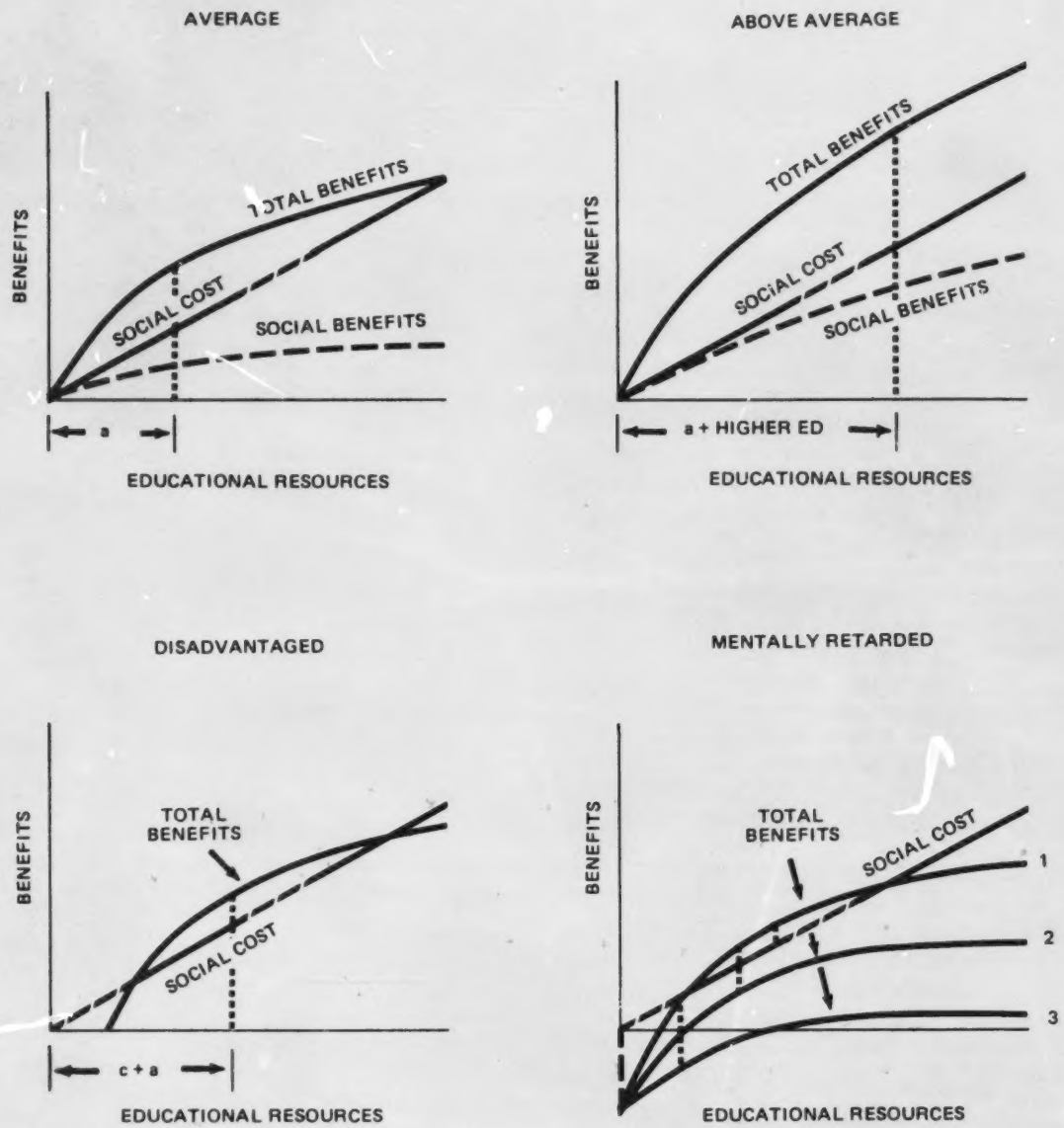


Figure 2. Illustrative Implications.

programs such as ESEA Title I and bilingual education that are deliberately designed to provide *more* than normal resources for students with initial learning barriers. As the analysis shows, the real rationale for these programs depends on the assumption that the programs can be successful in removing the learning barriers, and that the benefit curve thereafter will be rather similar to that for the average student. If these assumptions were shown to be essentially in error, it would dictate a reassessment of these programs which might either increase or decrease the level of support provided.

The curve in the upper right illustrates how the benefit functions might shift for a particularly promising or gifted student. In the case of such a student, additional education beyond the basic elementary and secondary entitlement is likely to yield higher benefits, both to the individual and to

society, than might be expected for the average individual. For example, additional education may allow such a student to make contributions to society as a scientist, a political leader, or a medical doctor, whereas such contributions would probably not be so likely for a less promising student. This increase in the expected benefits of higher education tends to increase the optimum level of educational resources, moving the optimum to the right on the curve.

Because of the anticipated social benefits of educating the above average individual beyond the basic entitlement, society is willing to bear at least a part of the cost of the higher education. For this reason, it sponsors scholarship programs for promising individuals and subsidizes State and local colleges. Because the individual himself will also benefit, he is normally asked to carry at least a part of the added financial burden. Because it is assumed that the individual is likely to be one of the best judges of the desirability of additional education, the decision to pursue such education is left primarily to the individual, subject to admissions screening. Although most of these extra educational resources for promising students fall outside the budget for elementary and secondary education, they are an important element in our overall educational policy, so they cannot be overlooked in the development of a valid theoretical perspective.

These cases suggest the way the existing programs have developed as approximations to an ideal educational policy. In each of the preceding cases, it seemed fairly clear that some kind of supplementary educational program was indicated. In the case of certain types of handicaps, particularly in the case of individuals with serious mental retardation, it is far less clear what type of educational response is most appropriate. The graph in the lower righthand corner of Figure 2 illustrates some of the issues involved.

Unless some appropriate training is provided, the mentally retarded individual is potentially a burden on the society. This is illustrated in the figure by the fact that the benefit curves for such individuals start well below the norm for normal individuals. The increase in the benefit curve with education in this case represents savings in the future social costs of caring for the individual as well as the direct benefit to the individual. The graph shows three different curves corresponding to different types of mental retardation.

In the first case, the individual is fundamentally a slow learner so that it takes more time and effort to reach a given level of performance, but through the use of additional educational resources it is possible to bring the individual to a reasonable level of performance as a productive citizen. For such an individual the optimum level of educational resources may be substantially above the normal entitlement, but the final level of achievement will still fall somewhat below the norm.

The second example illustrates a case where the learning ability is even lower and reaches effective saturation at a lower level of performance. With the equivalent of the normal educational entitlement, this individual will have learned much less than the norm, but additional effort in education would yield little benefit either to the individual or society, so the optimum commitment of educational resources might be very similar to that for a normal individual.

The third case illustrates an instance of even more severe retardation. Beyond a certain very minimal level, educational resources provided for this individual will be only a personal burden and a waste of social resources. The optimum level of educational effort for this individual may be much less than normal. The individual will remain a burden to the society, but the cost of achieving higher levels of effectiveness would be so high, both to the individual and to society, that it cannot be justified. For such an individual other social services such as food, shelter, and perhaps nursing care would be more appropriate and more beneficial than effort devoted to additional education.

The foregoing examples show how a pragmatic effort to approximate an ideal educational policy can lead to special programs that will provide either more or less (but usually more) educational resources for particular groups with special well-defined educational problems. It is now rather widely recognized that the goal of equality of educational opportunity in the United States requires that resources be provided to meet special educational needs. The foregoing model helps to clarify what we mean by a legitimate educational need. An educational need will exist whenever the personal and social benefits of additional education appear to be substantially in excess of the personal and social costs of providing the education. As demonstrated by the preceding examples, this idealized model of the goals of educational policy helps to explain the diversity of educational programs that are pursued in the name of equality of educational opportunity. It does not yet explain, however, the degree of policy emphasis that is attached to fairness and equity as opposed to simple effectiveness and efficiency.

If we were really concerned only with educational effectiveness and efficiency, it might appear that we should be willing to accept rather large deviations from fairness or equity. For example, one could increase the education provided for one individual by the equivalent of one or two years and decrease it by a corresponding amount for another individual without introducing a very large loss in the total efficiency or apparent social benefit. Such an arbitrary departure from the optimum would entail, however, a large loss in the fairness or equity of the educational program.

Since fairness and equity are themselves important human values, such a departure from equity would, in fact, involve a much larger loss in the total social benefit than is implied by the benefit curves shown in Figure 2. The issues of fairness or equity are omitted from these educational benefit curves because they cannot be displayed as a simple function of the educational resources. The equity values (or merit goods) depend not on the absolute level of educational resources but on the deviations from an optimum or fair allocation of resources that is defined by a policy ideal.

A basic concern for fairness and equity seems to be a universal human characteristic. Of course, the specific concepts of what is fair and equitable can vary quite widely, depending on the cultural traditions of the society and the local conception of the policy ideal. Nevertheless, within any society, when an individual or group is denied fair treatment in terms of the prevailing policy ideal, there is an unavoidable response of anger and frustration which detracts from the social benefit. When such inequities are allowed to persist, they generate hostility and social conflict. Because of this natural human response to unfairness or inequity, the concern for justice has to be one of the most important concerns of human social policy. The concern with equality of educational opportunity is fundamentally a concern for the fairness and equity or justice of the educational policy. To achieve fairness and equity within our educational policy we must be willing, if necessary, to sacrifice somewhat in the effectiveness and efficiency of the policy.

Our Pragmatic Approximation to the "Ideal" Policy

Practical educational policy in the United States provides a compromise between the ideal of equality of educational opportunity and other potentially conflicting objectives such as educational efficiency, individual freedom, and economic incentives. In addition, practical policy has had to adapt to a large number of practical problems which make it infeasible to provide a really accurate approximation to the ultimate ideal. The prevailing practical interpretation of the concept of equality of educational opportunity also tends to take these practical issues into account. Although the main goal of an ideal educational policy is to provide an educational program that is tailored as much as possible to the educational needs of each child, the economic necessity of group instruction in classrooms has made attainment of this goal infeasible. Nevertheless, to come as close as possible to this ideal objective, teachers are given wide latitude to direct their efforts to meet individual needs, and modern individualized instructional packages are being introduced which will permit even better individualization of instruction. Similarly, schools, school districts, and States have wide latitude to select an educational curriculum that is as effective as possible in meeting the specific educational needs of each area.

To some extent, of course, the present diversity in education programs reflects the lack of a consensus on educational goals and the lack of good information on the effectiveness of alternative educational programs. But it also reflects some real differences in the educational needs of different parts of the country. Moreover, in view of our uncertainty about the effectiveness of different approaches, the diversity provides a way of experimenting with alternatives.

Although there is wide diversity in the educational content offered in the various States, there is surprising uniformity in the basic educational concepts. To ensure that each individual is prepared adequately for citizenship, education up to some specified level is both free and compulsory. This level of free education is treated as a basic educational entitlement which is available to all students. Free education is often provided for several years beyond the compulsory level to permit individuals greater flexibility in meeting their own personal educational needs.

In the case of special educational needs, individual students and groups of students may be given access to educational resources beyond this basic entitlement, such as programs for the mentally retarded, handicapped, socially disadvantaged, or specially gifted. At present there are, of course, wide differences among the States in the extent and content of such special educational programs.

Contrast in Specification of Practical Versus "Ideal" Policy

Although actual educational programs are designed to provide an allocation of educational resources that will approximate the theoretical ideal, there is a very important difference between the practical programs and the theoretical ideal in the way the allocation of resources is specified. The allocation of resources in the idealized educational concept is defined in terms of a single universal rule which is at least theoretically applicable to all students. This rule is defined in terms of the relationship between educational costs and educational benefits. Unfortunately, however, these quantities are so difficult to predict (or even to measure) that they cannot be used as a practical administrative guide for educational programs.

For this reason, both the actual educational programs and the prevailing practical ideal are usually specified in terms of simple rules and procedures that are defined in terms of more easily measured quantities such as age and academic achievement. Indeed at one time these simple criteria of age and achievement were almost the only criteria that were used. A student of normal public school age had a right and duty to be in school. If the student reached certain levels of achievement he or she would be advanced to the next grade level. If a student graduated from public school with a sufficiently good academic record, a college scholarship was more likely to be offered.

This very simple, almost primitive, educational concept had a number of obvious advantages. Because the administrative procedures were defined in terms of rather easily measurable objective factors (such as student age and academic performance), it required a minimum of subjective judgment by the administrators. Obviously with such a simple educational policy, it should be comparatively easy to avoid personal bias in the administration of the programs.

But this simple educational concept also had many defects. Because it was comparatively simple and rigid, it ignored the special educational needs of students who did not fit into the typical mold. In recent years there has been a continuing effort to make education policy more responsive to the special educational needs both of minority groups and of individual students with special problems. Although these efforts have tended to make actual education programs correspond more accurately to the education ideal, they have also tended to complicate the rules and procedures that are needed to define the programs. They have made it necessary to define the administrative rules and procedures in terms of factors such as educational readiness, academic aptitude, poverty, or educational disadvantage that are measured less easily than age and academic achievement. As the rules and procedures begin to be defined in terms of these more subtle factors, there is an increased requirement for human judgment in the decisions and inevitably an increased risk of bias and inequity in the administration of the programs. It is obvious that there is a tradeoff in the design of the educational programs. As we introduce more complex rules and procedures to provide better "equality of educational opportunity" for students with special needs, we increase the dependence on administrative judgment and thus increase the risk of bias in the administration of the programs.

Regardless of how the practical educational programs are defined, it is important that they be administered as fairly and equitably as possible. We noted earlier that the human sense of fairness and equity seems to be related to a policy ideal, and the policy ideal may vary depending on the cultural environment. Consequently, the issues of equity or fairness must be considered *both* in the relationship between the practical educational programs and the policy ideal *and* in the relationship between the actual implementation of the practical programs and their formal or legal definitions. Thus, the issue of justice and equity arises not only in the formulation of educational programs but also in their administration or implementation. Significant departures from fairness at either level can produce a serious loss in the human value benefits of the educational program.

Legitimate Versus Non-Legitimate Distinctions

Equality of educational opportunity does not require a complete lack of distinction among individuals or school districts. Indeed, distinctions *must* be made to provide for the special needs of the individual and the differences in educational priorities in different local areas. Equality of educational opportunity, however, does require that such distinctions should be limited only to factors that are educationally relevant (i.e., those that are concerned with the relationship between educational benefits and educational costs). Thus, legitimate distinctions can be based on differences in interest, aptitude, educational readiness, and career objectives. According to the ideal concept of equality of opportunity,

however, distinctions cannot be legitimately based on educationally irrelevant factors such as race, sex, wealth, ethnic background, social status, or religious commitment (which are not related to the costs or benefits of education). From the perspective of this idealized concept, distinctions that are based on such irrelevant factors are discriminatory and incompatible with equality of educational opportunity.

Although this boundary between legitimate and non-legitimate distinctions is clear and simple in the context of the ultimate or idealized concept, it is not necessarily as simple in the context of our evolving practical concept. The problem arises both because of conflicts with other objectives and because of the correlations that can exist between educationally relevant factors such as interest, educational readiness, and career objectives and educationally irrelevant factors such as sex, race, and wealth. Because of these correlations there can be legitimate disagreement within the prevailing practical interpretation about the extent to which it is permissible to use factors such as sex or race as an indicator of educational need or objectives. Within the last decade the prevailing practical view has been gradually shifting toward an interpretation which refuses to accept such criteria even as indicators of educational need. In addition there has been a gradual increase in the priority given to equality of opportunity as opposed to certain possibly conflicting objectives such as individual freedom, economic incentives, and educational efficiency. These shifts of emphasis in the prevailing practical ideal have been responsible for much of the recent legal and popular concern with the equality issue. A brief review of the way the prevailing concept has shifted with regard to the specific issues of sex, race, and wealth will help to illustrate the principles and clarify the relationship between the practical and the ideal interpretation of equality of educational opportunity.

Thirty years ago it was almost universally accepted that the typical educational needs of boys and girls were sufficiently different to justify using sex as a criterion for defining educational programs. It was assumed that the typical differences between the sexes in interests and career objectives were sufficiently large to justify substantial differences between the standard curriculums for male and female students. The purpose of this distinction could be easily explained in terms of the idealized educational concept. The purpose was not to deny equality of opportunity to women but to provide equality of opportunity by offering a curriculum which was more accurately tailored to the assumed needs of individual students. Because of the practical difficulty of identifying such differences in educational needs on an individualized basis, the use of sex as a criterion for defining curriculum differences seemed to be justified in a pragmatic educational policy.

More recently, of course, there has been a large reversal of this view. With larger numbers of women entering the general labor force, there has been a recognition that the stereotyped differences between male and female educational programs were limiting rather than enhancing the career opportunities for females and that therefore most of these distinctions were no longer appropriate. With the removal of sex as an appropriate criterion for guiding educational policy, there is of course a greater burden on the education system to make individualized choices which will correctly reflect the particular needs of each student as a person.

The history with regard to race as a legitimate educational criterion is quite different. In this case, changes have been guided not so much by changes in the perception of what was best for the blacks, but by a growing willingness to accept the black population as full and equal citizens. Thus the shift in the educational treatment of blacks has been primarily a result of a growing sensitivity to ethical issues, and an increase in the priority attached to equality of opportunity for all individuals.

It seems clear that, in terms of the ideal concept of equality of educational opportunity, individual wealth is also not a legitimate distinction. In principle, therefore, educational opportunity should be independent of the wealth of an individual's parents or locality. In practice, as we shall see in Section V, the level of resources made available to school children depends very strongly on the wealth of the locality in which they live. The courts in several States have acted to weaken the link between local wealth and educational resources in the public schools within their jurisdictions, but the process of bringing practice into line with principle has been slow and uncertain. This process reflects interesting similarities and contrasts with school desegregation. Like desegregation, school finance reform is opposed on the grounds that it flouts the principle of self-determination and that, if implemented, it could mean the end of quality public schools (since those with the means to do so can switch to private schooling). The contrast between desegregation and school finance reform, on the other hand, is that no one in the mainstream of American life maintains

that differences in wealth should or could disappear, since it is the potential difference in wealth that provides incentives to maintain the free-enterprise system. There thus appears to be a conflict between two basic principles.

There are a number of ways by which the conflict can be minimized. Methods are available for equalizing tax power, aimed at making the level of resources available in each school district proportional to the local tax effort. Such techniques in effect provide an educational subsidy for poorer districts proportional to their local tax effort, with the subsidy being obtained by diverting some fraction of education-oriented tax revenues from school districts having a larger local tax base. Such schemes do not actually eliminate the relationship between wealth and educational opportunity; rather, they redefine educational equity in terms of tax burden instead of wealth. A realistic appraisal of the problem suggests that it is probably not feasible to eliminate completely the effects of wealth on educational opportunity, and the policy issue in this area must be whether or not the effects of wealth on educational opportunity have been sufficiently reduced to accord with our concept of equity.

One interesting implication of the idealized educational concept is that legitimate educational distinctions can in fact be made on the basis of differences in the cost of providing specific educational services. This observation is of course consistent with practical policy and in fact is supported by a number of court decisions. For example, if a school district has only one or two Spanish-speaking children, it is not likely to be practical to provide special bilingual education. Although the district has an obligation to provide some reasonable educational assistance to such students, the absence of a bilingual program in such a district is not an indication of discrimination. On the other hand, a district that has a concentration of 25 percent Spanish-speaking children would have a real obligation to provide special language instruction. In such a district the balance of benefits versus costs makes it clear that such instruction is needed, and the absence of such instruction could be interpreted as clear discrimination against the Spanish-speaking minority.

The cost principle can also influence the services that should be supplied in districts of different population density. For example, in rural districts it may not be practical to make available the same diversity of education programs that can be supported in large urban areas. Such local variations in the types of education services provided are not necessarily an indication of discrimination but may be only a realistic recognition of variations in educational costs. Obviously, it does not follow automatically that such services should not be provided. Many services should be made available despite the increase in cost. The point is that a value judgment must be made concerning the balance of costs and benefits. It is not appropriate to avoid the value issue by arbitrarily requiring either identical educational services or identical educational costs in all districts.

A proper policy dealing with equality of educational opportunity needs to pay careful attention to the differences between educationally legitimate and non-legitimate distinctions among individuals and school districts. The objective is to avoid any distinctions based on educationally irrelevant factors without interfering unduly with those distinctions that are legitimately based on educationally relevant factors.

The Prevailing Practical Concept

The prevailing practical interpretation of the concept of equality of educational opportunity is difficult to define. It lies somewhere between the present laws and educational programs and the idealized concept. It is only very vaguely defined and is subject to evolutionary change. For the purpose of the present study, however, it may be helpful to try to define the prevailing concepts somewhat more specifically.

With regard to elementary and secondary education, the prevailing view seems to be that all students should have equal access to a basic educational entitlement which is represented by a 12-year elementary and secondary education. Moreover, the view seems to be that the level of educational resources should not be dependent on the wealth of localities. This principle is applicable in all situations, except in the case of certain special educational needs that have been specifically identified by law as requiring more than the normal level of educational resources. The prevailing concept, however, is still unclear both with regard to what special educational needs should be so recognized and with regard to the level of additional resources which should be provided.

Actual educational programs in the Nation differ from this simple statement of the prevailing concept as a consequence of differences in educational policy

among States and among local school districts in a State. The quantitative analysis which is developed in Section V is designed to provide a quantitative comparison between actual existing educational programs and this simple statement of the prevailing practical concept.

Although in theory it might seem more interesting to provide an analysis relative to the ultimate or theoretical ideal, it appears to be infeasible at present to provide any useful analysis of individualized educational needs based on the balance between costs and benefits. Thus, the decision to relate the analysis to the prevailing pragmatic concept rather than the theoretical concept seems inevitable.

IV INDICATORS AND EDUCATION POLICY

The preceding section developed an idealized interpretation of equality of opportunity which is both equitable and educationally efficient, and showed that actual education policy in the United States can be interpreted as a pragmatic approximation to this ideal. According to this idealized concept, the level of educational resources provided for each individual should be determined by the relationship between the expected costs and benefits of additional educational resources. It follows that any really comprehensive indicator of inequality of educational opportunity should be defined in terms of such a relationship between educational resources and the expected benefits.

Our present ability to predict, or even measure, the benefits of education is far from adequate, however, to support such comprehensive indicators. Because of the obvious difficulties of assessing educational benefits, practical education programs are defined in terms of simplified rules that specify the types of education programs that should be available for specific types of students. Thus, education policy can be considered at two levels. At a fundamental policy level, we can ask what quantity and quality of educational resources are needed to meet the educational needs of the various groups in society. At an administrative policy level, we can ask whether existing programs are so designed and administered that they will actually deliver the quantity and quality of resources that we have decided are appropriate. This distinction between the fundamental, as opposed to the administrative, policy issues is important to the development of indicators because different types of indicators are needed to deal with the two different levels of policy issues.

At the fundamental policy level there is a need for a wide variety of indicators, of both educational costs and benefits, that can assist in the development of an informed judgment about the relevant human value issues. The policy issues at this level are so dependent on human value judgments that there is no practical way to develop formal objective indicators that would be comprehensive and generally acceptable. At the administrative policy level, however, the issue is quite different. At this level we are concerned primarily with the correspondence between the educational resources actually delivered and the resources that we have decided are appropriate on the basis of the more fundamental policy judgment. Although there are still serious difficulties in the development of valid indicators of educational resources, it is nevertheless possible to provide relatively objective resource indicators that can be applied rather directly to the analysis of educational policy at this administrative level.

The indicators and policy analysis developed in this report are, of course, focused primarily on the administrative policy level. However, the basic concepts developed in Section III have some important implications with regard to the formulation and evaluation of policy at the more fundamental level. Our purpose in the next two subsections is to consider the relationship between indicators and educational policy, first at the fundamental level and then at the administrative policy level.

Indicators and the Fundamental Policy Issues

The goal of equality of educational opportunity at the fundamental policy level involves the equitable allocation of resources to meet the educational needs of all segments of the society. What is the proper level of resources to provide for the handicapped, the mentally retarded, the specially gifted, the educationally disadvantaged, or those with a language barrier? To address issues of this kind it is necessary to make judgments about the relationship between educational costs and benefits for students who may have very different educational needs.

The theoretical interpretation of the educational ideal as developed in the preceding section provides some useful guidance with regard to the principles involved. The proper allocation of resources to special needs groups should ultimately be based on the relationship between educational benefits and educational costs. It is neither feasible nor desirable to

provide all disadvantaged students with whatever resources may be beneficial, for such resources are inevitably purchased at the expense of other citizens and other students. In order to guide such decisions we need information on the social and academic benefits that can be expected from additional education and we need to relate these benefits somehow to the costs of the additional services. It is important to emphasize that this comparison of benefits and costs should be in terms of human values, not simply in terms of dollars or academic achievement. At present there is no way such a comparison can be made except through the exercise of human judgment.

Because of the importance of judgment in dealing with the basic valuative issues, we can expect that issues of this type will necessarily continue to be decided through the exercise of human judgment within the political decision process. Improved measurement techniques that are more closely related to the real educational objectives should help to improve this process, but they cannot be expected to replace it.

If we are to improve our ability to make such judgments on a relatively objective basis, we will need to give careful attention to the kinds of benefits that education is expected to provide. What specific benefits are expected and what procedures (formal testing or otherwise) can be used to assess the extent to which the desired benefits are actually achieved? Obviously, the study of the relationship between educational benefits and educational costs is the traditional domain of educational research. The issues of psychology, motivation, and aptitude that are involved are far too complex to be addressed specifically in the present study. Our purpose here is only to show how information provided by such educational research relates to policy decisions concerning equality of educational opportunity.

Statistical information organized and analyzed at the national level can be a very useful aid in developing a better understanding of some of these cost-benefit relationships in education. A major part of the NCES response to the mandate to report on the condition of education rests in assessments of the quality of education as measured by outcomes. The National Assessment of Educational Progress and the National Longitudinal Study both relate directly to this responsibility. The work that NCES has done over the years in collecting and disseminating data on education outcomes is a valuable product of wide use in the education community, and the indicators of outcome in *The Condition of Education* are particularly helpful.

If this type of information on outcomes were combined with information on resources and revenues such as that contained in the ELSEGIS data file, it seems likely that it could contribute substantially to an improved understanding of the relevant relationships. Although it is unrealistic to expect such an analysis to provide any simple objective indicators of the cost-benefit relationships, it should contribute substantially to the development of more informed judgments concerning these issues. Obviously, one should not plan to rely exclusively on the formal statistical results of such nationwide analysis, for there is always much more information in such surveys than will appear in the national averages. It is important to look behind the statistical relationships to understand the underlying cause-and-effect relationships. Moreover, wherever possible it is important to support the statistical findings by specific research experiments to confirm the indicated cause-and-effect relationships. Through the use of a combination of national statistical data and the traditional methods of educational research it should be possible to provide an improved understanding of the relevant relationships.

In developing these judgments, however, one should remember that the purposes of education are broader than purely academic and that factors such as social adjustment and preparation for citizenship also need to be considered. Although it is much more difficult to evaluate progress in these areas, such progress needs to be considered in the overall assessment of the educational benefits. This may suggest that the Federal Government should place greater emphasis on educational and sociological research aimed at providing better methods for evaluating these less obvious educational benefits.

To illustrate how such judgments concerning educational benefits can and should be applied in the assessment of equal opportunity educational programs, we will consider two specific examples: the ESEA Title I program which is designed to provide extra educational resources for students who are educationally disadvantaged and the recent act dealing with the education of all handicapped children.

The Title I program is designed to provide extra educational resources for students who are educationally disadvantaged. To reach these students the program is targeted at schools and school districts that have a higher-than-average enrollment of poverty students. Within these schools the program is aimed at students who are not achieving at the expected level. The basic premise of the act is that extra resources are needed to overcome the disadvantages of the social and economic environment so that these students will be

able to perform at a level more commensurate with their native ability. The foregoing idealized concept of equality of educational opportunity makes it clear that the justification of this program depends ultimately on the educational results it can produce; and indeed there is now considerable congressional pressure to evaluate the program in terms of the results produced. To evaluate the program we must ask whether the educational benefits actually achieved are commensurate with the cost of the program. If it could be shown that the program is producing very large educational benefits relative to the costs, then the program obviously would be justified and it might be appropriate to expand the program even further. Conversely if it could be shown that the program is producing little or no educational benefits, one could conclude that the existing program is not justified and that it should be either restructured or eliminated. Although at present it is unlikely that educational research can provide such definitive results, this example shows how the results of research can affect policy decisions with regard to equality of educational opportunity.

The program administered under the *Education for All Handicapped Children Act* has not yet reached a stage suitable for such a critical review, but it is reasonable to expect that such a review will be required at some time in the future. The act specifies that every handicapped child must receive a free education appropriate to his or her unique educational needs. However, the act is not specific with regard to how educational "needs" are to be defined or what is to be interpreted as education "appropriate" to the needs. Presumably these interpretations are to be left to administrative regulations.

Whether or not the resulting program will be able to pass future congressional scrutiny may depend on how these issues are resolved in the administrative regulations. If educational "needs" are appropriately defined to mean the gap between the present education of the child and the educational level which provides a proper balance between costs and benefits, then it is likely that the program can produce a very helpful contribution to equality of educational opportunity. However, if educational need is defined to mean the gap between the current status and the educational resources required to allow the handicapped child to reach his maximum potential regardless of cost, then there is a risk that the program could lead to a serious waste of educational resources, and it might ultimately be counterproductive relative to the goal of equality of opportunity.

In the legislative formulation of these and other special educational programs it is important to take into account the practical limitations in our ability to evaluate educational needs. We noted earlier that actual educational programs can at best be only a rough approximation to the educational "ideal." The practical limitations in our ability to realize the ideal arise partly because of our inability to accurately measure or predict educational benefits, and partly because of conflicts with other social objectives which make it either impractical or undesirable to provide perfect equality of educational opportunity.

Because of the present limitations in our ability to evaluate special educational needs, a proliferation of special-needs legislation could pose a real threat to the goal of equality of educational opportunity in the United States. Even in the existing programs which deal with rather obvious categories such as language barriers and poverty, it has proved very difficult if not impossible to provide any objective estimate of the additional educational resources that may be appropriate. As the number of special needs groups eligible for extra resources increases, the problem of ensuring that the programs are unbiased and educationally justified becomes increasingly complex. Indeed, if enough special needs groups are defined, the child who is not eligible for special assistance might legitimately claim to be a victim of discrimination.

As the number of special needs programs increases, decisions on the allocation of educational resources are likely to become less objective and more dependent on the political influence of special-interest groups. For this reason it is important to avoid any nonessential expansion in the categories of educational need that are officially recognized as deserving of extra resources.

Indicators and the Administrative Policy Level

Although considerations at the fundamental policy level necessarily involve the relation between resources and benefits, the concern at an administrative level involves the relation between the educational resources actually provided and the resources that we have determined to be needed. The Title I context again serves as an example. Regulations require that educationally disadvantaged students served under the program have available to them, from State and local funds, a basic program roughly equal to that of children not receiving such services. This quantitative relationship can be investigated using resource indi-

cators only, and they are so used in monitoring the Title I comparability requirement.

There is a further contrast between policy and administrative levels. Administrative requirements for equality – or requirements stipulating the degree of disparity that constitutes inequality – tend to be expressible in quantitative and absolute terms. The Title I comparability requirement and the *Hobson v. Hansen* requirement stipulate specific quantitative standards, both in the sense that they define (although differently) the components of education cost to be considered and in the sense that they define a point of disparity at which equality ceases and inequality begins. On the other hand, the policy level operates without resort to an absolute standard of resources and without access to a single point at which inequality can be identified.

The indicators that have been applied at the administrative level have traditionally fallen into two main categories: those that are concerned with equality of access, and those that are concerned with equality of educational resources. Generally the access indicators tend to be most useful in the early stages of an equalization program when there are likely to be real access barriers to the specific student groups. Thus access indicators were widely used in the early stages of racial desegregation, and they are now quite helpful in the analysis of various types of sexual discrimination.

The Supreme Court decision which ruled segregated schools to be inherently unequal gave rise to a need for a variety of indicators providing information on the racial composition of schools. The earliest indicators were essentially access indicators which asked what fraction of the black students attended schools that were 100 percent segregated. Later this criterion was revised to consider schools with some specified but high percentage of minority students. At present the most commonly used measure is the desegregation index which measures the degree of interracial contact in the schools of a district. There is now a growing recognition, however, that in order to provide a better representation of the actual situation there is a need for indicators that can reflect the relationship between the racial composition of the schools and the composition of the neighborhood environment. One such approach which also provides a measure of the desegregation effort was designed last year under a contract sponsored by the Office of the Assistant Secretary for Education.*

*See *Alternative Measures of Desegregation*, J.N. Killalea, George E. Pugh, and Bruce Loatman, Education Policy Research Center (forthcoming).

Theoretically it might appear that the access indicators are merely simplified forms of resource indicators, for it is hard to see how there could be inequality of access without a parallel inequality in the allocation of educational resources. In practice, however, this is really not true. Since resource indicators are defined over the population of students enrolled, potential students who are denied access may not be listed at all in the data to which the indicators are applied. Thus in practice there is a need for access indicators to ensure that relevant individuals are not completely omitted from the educational population, and there is a need for resource indicators to ensure that the school populations are fairly served.

There are a number of different types of resource indicators that might be appropriate for different types of applications.

1. *Indicators of Total Educational Resources*

This is probably the most obvious and generally useful type of indicator for use at the federal level to evaluate the departures from equality of opportunity on a nationwide basis. These indicators can be applied in a monitoring role to detect situations in which the allocation of educational resources may discriminate against specific population groups. Because the Federal responsibility is concerned primarily with overall resource levels (leaving the specific choices on educational curriculum and priorities to the State and local level), these indicators should focus as much as possible on the total educational resources provided.

Such indicators should be designed so that they may be computed from information that is available or can be made available for all school districts through standard reporting procedures. To provide a proper measure of actual educational resources, such indicators should probably correct for differences in the cost of educational resources in different regions of the country and for cost differences between the rural and urban environments. Such indicators can be used both as an aid in detecting discrimination and as a general guide in the development of Federal policy on equality of educational opportunity. Since no single indicator can be perfect, and each will have different faults, it may be appropriate to develop a number of different indicators of this type. The analysis in the present study is concerned primarily with certain indicators of this type.

2. *Formal or Legal Indicators of Educational Resources*

To help in directing supplementary Federal funds toward desired target groups or to motivate civil rights compliance, there may be a need for indicators that can be incorporated in legislation, for example as in Title I, as a legal criterion governing the allocation of funds or as a legal requirement for civil rights compliance. The resource indicators appropriate for this type of application are technically very similar to the general resource indicators mentioned above, but to be suitable as an official or legal criterion, an indicator should be particularly simple and noncontroversial. For example, sophisticated statistical corrections for cost variations which might be acceptable in a research-oriented indicator might be unacceptable in a formal or legal indicator. On the other hand, the resource indicators of the first kind might well be used as a guide in selecting the most appropriate legal indicators.

3. *Supplementary Resource Indicators*

When statistical information of any kind is collected, there is always a risk that some of the data will be deliberately or inadvertently misleading. This risk is particularly strong where the information is likely to be used as a basis for the allocation of funds. Thus, there is often a need for supplementary information which can help in detecting falsified or misleading information.

For example, although there may be no real need at the Federal level to know the specific mix of educational resources (teachers, teacher aides, etc.) that is actually supplied, the availability of such information can sometimes be helpful.

4. *Supplementary Benefit Indicators*

Information concerning educational achievement and other educational benefits can also be very useful as a supplementary indicator of educational resources. The usefulness of this kind of information as an indicator depends on the assumption that aptitude, interest, and motivation will, on the average, be quite similar within any large social group. Consequently, where achievement scores (or other educational benefits such as the fraction of college attendance, the quality of jobs obtained, or income level) seem to be systematically lower for some group than for the general population, there is a reasonable presumption that equality of educational opportunity may not have been provided. However, this presumption could in fact be incorrect if there are substantial pre-existing differences either in the typical motivation or interest of the group relative to the rest of society or in the educational requirements of the local job market. Consequently educational outcome information can never provide more than circumstantial evidence of discrimination. Whether there is actual discrimination depends on whether the education provided offers a balance of benefits versus costs comparable to that provided for the rest of society.

Selection of Indicators for the Present Study

The interviews held early in the project identified a wide range of interests in indicator development. Although the total interest was wide, there appeared to be the consensus that the greatest need was for resource indicators that could be applied to a national data base to obtain assessments, no matter how approximate, of the extent of inequality of educational opportunity. Such assessments are of value as an NCES tool for advising Congress on the condition of education and for assisting in detection of potential discrimination. They are also important aids in guiding consideration of school financing and tax considerations. Great interest was also displayed in measures that might eventually be employed in assessing inequalities for handicapped children, undoubtedly motivated by recent passage of the Education for All Handicapped Children Act. Unfortunately, the development of a formal indicator suitable for such an assessment appears to be beyond the present state of the art.

Accordingly, the approach taken in this study has been to develop a resource measure that could be applied to a national data base to assess disparities in the general student population, and to study as well the disparities across other populations and socioeconomic situations.

The development of resource indicators must take into account certain priorities and constraints:

- *Simplicity.* In the series of interviews conducted early in the study, the characteristic identified as most important is simplicity. Although it may be desirable for technical reasons for an indicator to be calculated by a direct and simple mechanism, the simplicity referred to by the interviewees is as viewed by the user. This emphasis on simplicity of understanding will often conflict in some degree with the criteria of comprehensiveness and validity.

• *Comprehensiveness.* It is desirable, as assurance of validity, that a resource indicator encompass as much of the resources in the education system as possible. Often, analyses employ an indicator that covers substantially less than the entirety of educational resources. Although this may be justified by the fact that the indicator includes the largest or most important portion of total resources, such incomplete coverage is acceptable, but only when it is explicitly noted, so that the user can determine whether or not the tradeoff between simplicity and comprehensiveness is satisfactory for a particular application. If possible such an indicator should be tested and compared against more complete indicators, so that the user can obtain an estimate of the error potential of the indicator.

• *Validity.* It is implicit, in the discussion of simplicity and comprehensiveness, that validity is an important criterion for indicator development. Two points have to be made. First, validity is not an overriding criterion, since it must trade off with simplicity. More important, there are very important limits on the extent to which an indicator can be validated at all, since there is no accepted criterion of what resources *should* be available to children. This study has taken an approach of developing a norm based on nationwide averages of resources provided. Although the approach is taken because no acceptable alternative appears to be available, it is nonetheless subject to the caution that validity, like equality, is a relative rather than an absolute goal.

• *Feasibility and Cost.* It is desirable for an indicator not to require data collection so frequent or so exhaustive as to increase the expense above reasonable limits. Moreover, an indicator should be applicable for use as a trend-analysis tool, as well as for a snapshot assessment; this implies that at least some minimum set of data elements is required periodically, perhaps augmented by less frequent collection for certain other resource elements.

The resource indicators of the type developed for this study are inherently limited to an analysis of educational issues at the administrative rather than the fundamental policy level. That is, they are useful for a comparative analysis in which the actual resources provided are compared with some specific concept concerning the resource levels that ought to be provided. In principle, therefore, such measures could be used to evaluate equality of opportunity for the handicapped if there were some well-defined concept of the appropriate resource levels for various types of handicapped. Unfortunately, however, the real problem in developing practical programs for the handicapped is that no such estimate of the appropriate resource levels is available. Thus, realistically this type of measure is not likely to be of much value in the monitoring of education for the handicapped until after some reasonable consensus on the appropriate programs begins to emerge.

In order to provide any real information on the resource levels that ought to be provided, it is necessary to combine information on the resource levels with information on educational outcomes. Although it is certainly beyond the state of the art to provide a formal or comprehensive indicator which properly compares existing programs relative to the ideal cost benefit balance, it appears to be entirely possible to provide an analysis of the relationship between educational resources as analyzed in the present study and a variety of outcome indicators such as academic test scores and others that are reported by NCES, for example in *The Condition of Education*. Although the application of this concept to the handicapped would require more comprehensive information than is now available on that population, the concept could be applied quite effectively to the general area of elementary/secondary education using presently available data sources.

In the course of interviews conducted during this period, virtually no interest was shown in the development of indicators of inequality of educational outcome. We can only surmise what accounts for this lack of interest. To some degree it probably reflects a realistic appraisal of difficulty of relating outcomes to any practical concept of equality of opportunity. For another, NCES already sponsors two major studies, the National Assessment of Educational Progress and the National Longitudinal Study, which provide a wide variety of information on outcomes. Yet, in a more fundamental sense, information on outcomes is critical to the development of programs that can provide better equality of opportunity. The more easily measured areas – access and resource inequalities – are of real concern principally because we assume that they relate to outcomes. All students, regardless of race or ethnic heritage, should be admitted freely to schools as a constitutional right; but it is plainly expected that school desegregation will eventually lead to better outcomes for minorities. Moves to correct imbalances in resources within the States are based not just on the idea of equity, but also on the assumption that the equity thus purchased will lead to greater equality of outcomes. In this sense, then, outcome is primary and access and resources are derivative.

Although the development of a really appropriate

measure of equality of opportunity based on outcomes would be a monumental task, it seems likely that some very useful insights could be obtained by combining information on outcomes with information on resources in a single nationwide analysis. The extent to which various outcome measures appear or do not appear to be correlated with educational resources in such an analysis should help in assessing the need for Federal action aimed at further equalization of educational resources.

V THE ANALYSIS

This study was originally motivated by the desire to analyze the status of elementary and secondary education in America with regard to inequality of opportunity. Recognizing that such an analysis would depend on quantitative measures of equality and inequality, NCES placed first priority on their development and secondary priority on applying them to the Census/Elementary and Secondary General Information System (ELSEGIS) data base to derive an assessment. This section describes first the methodology and then the results. The discussion of the methodology reviews the data file, the general analysis concept, the alternative measures of educational resources developed in this study, and the relation between the measures and district size and type. The last half of the section summarizes the results. In keeping with the priorities of the project, the principal effort in the study was applied to methodological development; the summary discussion of the results is to be considered as only suggestive of the findings. Many readers will be interested primarily in the results, but we caution that a correct understanding or interpretation of the results is not possible without at least a basic understanding of the indicators and methods employed.

The discussion is intended to be thorough but nonmathematical; the methodology and mathematical derivations are presented more fully in notes at the end of the section.

Analysis Procedures

The Data File

The preceding sections developed the conceptual framework for the study from a very general perspective, with no reference to a particular data base. Actual indicators, on the other hand, must be developed with reference to specific data, although of course an indicator should be sufficiently flexible in form to be used with other data sources. The indicators discussed here were developed with specific reference to the 1970 Census/ELSEGIS data file, thus providing not only a testing ground for indicator development but also an assessment of inequality of educational opportunity in that year and a means of evaluating the effectiveness of files like Census/ELSEGIS in supporting future assessments of this kind.

The basic Census/ELSEGIS data file contains aggregated information for a nationally representative sample of 4,716 school districts with enrollment of more than 300 students.[1]* The file used in the study includes four types of information:

- From the 1970 Census Fourth Count of Population: economic, social, ethnic, and racial data, together with some data on the degree of urbanization
- From Part B of ELSEGIS for the 1969-70 school year: expenditures by category and revenues by source
- From Part A of ELSEGIS for the fall of 1970: teachers and other instructional staff by level of education, and enrollment and attendance by grade level
- From a file developed by the Office of the Assistant Secretary for Planning and Evaluation: equalized property values per pupil

The analysis that can be carried out using any data file is of course limited by the contents of the file. The most important limitation of the Census/ELSEGIS data file arises because it deals only with aggregate district information. Because it provides no information on within-district differences, it is not possible to analyze differences between schools in a district in terms of the level of resources or the characteristics of their students. It follows that in analyzing the level of resources to, say, minorities, we are restricted to comparing districts only by their varying proportions of minority students; there is no assurance that the minority students are receiving the district's average per-pupil resources. There are two other important limitations of the file. It does not include information on educational achievement, and consequently any analysis of inequality using the file is restricted to educational resources provided to the students. In

*Notes appear at the end of this section.

addition, it does not contain information on special education programs, and accordingly an analysis cannot take account of the nonuniform distribution of such programs.

Strictly speaking, information on the sources of educational revenue is not needed for an analysis of inequality in educational opportunity. From the point of view of a student, the revenue sources are irrelevant. For a Federal or State review of inequality of educational opportunity, however, it is important to know to what extent existing Federal and State programs are contributing to an equalization of educational opportunity. It is also important to know whether or not the financial burden of education is equitably distributed among the various ethnic, social, and economic groups. For these reasons it was decided to analyze revenue source information as well as educational resources.

The Analysis Concept

The basic goal of the analysis is to measure the variations in per-pupil educational resources delivered by the Nation's school districts. To what extent can variations be explained by legitimate factors such as differences in educational costs? To what extent are the variations correlated with factors that are educationally irrelevant, such as race, property wealth, or family income? Since there is no officially recognized level of educational resources that "ought" to be delivered, it was decided to use the Census/ELSEGIS data itself to establish a national average or "norm" of educational need for various types of school districts and then determine the extent to which individual school districts differ from this established norm.[2] It was recognized that legitimate differences between school districts might dictate different resource levels. For example, the per-pupil resource level for an elementary school district will generally be lower than for a secondary school district. Unified school districts, which serve both elementary and secondary students, will usually operate at an intermediate level in per-pupil educational resources. Similarly, economies and diseconomies of scale in the operation of a school district may require differences in resources. A very small school district may have to operate with small classes and schools, whereas a very large school district can economize with larger classes but will usually experience larger per-pupil non-instructional costs. Although some of these variations in the appropriate resource level may tend to cancel, there is reason to believe that there are some real variations in the appropriate per-pupil resources depending on the size of a school district.

After the national norm or average resource level for various types and sizes of school districts (to be specified below) was determined, individual districts were compared with this average or norm. A district which delivered only 90 percent of the average resource level for districts of its size and type was given a score of .90; a district that delivered 115 percent of the average for its size and type was given a score of 1.15. The resulting scores were analyzed to see to what extent their variations were correlated with factors such as race or wealth that should be educationally irrelevant.

The appropriate level of resources per pupil for a school district will depend on many other factors as well. For example, it might depend on the percentage of students in the district who have some type of special educational need. It might also depend on the extent to which the local job market has a need for vocational training. Although many factors may legitimately influence the appropriate resource level, only two – grade level composition and district enrollment – entered into the computation of norms for this study.

Data on the distribution of handicapped pupils were not available in Census/ELSEGIS. Although data on other factors that might affect the appropriate norm, such as proportion of poverty or of Spanish-language population, were available in Census/ELSEGIS, they were not used to determine the norms. One of the main purposes of this study was to measure the disparities in resource distribution across just such groups. Since there is no generally accepted norm for these groups, the study focused on the raw inequality of resource distribution, regardless of educational need. If one judges these groups to require more resources than the norm, then any disparities noted here should be magnified in accord with that judgment. This is not to say that judgments of need are impossible or unnecessary, but only that the issue of need has been separated from the issue of resource distribution in this study. This makes it easier for one to draw one's own conclusions, without having to adjust for assumptions with which one disagrees.

Alternative Resource Measures

One of the most important issues in the present study was the selection and evaluation of specific methods for estimating education resources. The choice of measures was subject to several goals and

constraints: comprehensiveness in terms of including important components of education resources, simplicity and intuitive clarity, accuracy, and sensitivity to legitimate and non-legitimate variations according to local circumstances.

Perhaps the most obvious such measure might be provided simply by dividing the total educational budget of a district by its enrollment. Such a simplistic approach has some rather serious defects. First, there are large differences in the cost of hiring teachers both among the different regions of the country and between urban and rural school districts. Consequently any effort to use dollars as the sole criterion of comparison could produce a distorted picture of the educational resources actually delivered to the students. Second, there are rather wide variations in the way districts report yearly capital expenditures that have little or no correspondence with the educational resources actually delivered to the students in any given year.

To minimize the effects of such irrelevant financial variations, an effort has been made to choose measures that are related to the actual educational resources, such as teachers and books, and including in some cases plant maintenance, food and health services, and the like. Six resource measures were developed and checked against each other to see how sensitive the results are to the specific choice. The measures range from some very simple and obvious alternatives to some that are relatively sophisticated. The following discussion proceeds through the measures in order of increasing complexity, so that defects and limitations identified in the simpler ones serve to motivate some of the more complex versions.

M1. Current Expenditures

This very simple measure is obtained by summing the reported current expenditures (excluding transportation) and dividing by the total enrollment in each school district. The rationale is that the value of educational resources provided to students ought to be about proportional to their cost.

One weakness of this measure – shared by all the others developed here – is its failure to reflect the quality of school facilities. The Census/ELSEGIS data base does not contain any information that can support an accurate assessment of the quality of school facilities provided to the students. On the other hand, capital expenditures are typically a rather small fraction of a school district's budget, so that this omission may not be very serious. Probably a more important weakness of this measure is that it does not reflect the differences in the cost of providing educational services in different school districts. The same dollar budget per student might produce a quite different quality of education in different parts of the country. Most of the alternatives that follow are intended to correct this problem by referring to actual educational resources rather than dollars.

M2. Classroom Teachers

Teacher salaries typically account for about 58 percent of the current operating budget for a school district, exclusive of transportation.[3] This simple measure, which is obtained by dividing the number of classroom teachers by the total enrollment, therefore accounts for a large fraction of the total educational resources. By dealing directly with the educational resources rather than the cost of the resources it corrects one of the most serious problems with the previous measure. In other ways, however, it may be less satisfactory. It fails to reflect any of the differences in the training, experience, or quality of the teachers that might be reflected in salary differences, and it omits completely all educational resources except the teachers.

M3. Instructional Staff Weighted by Degree Level

One way of improving on M2 is to give different weight to teachers with different levels of experience and education. The ELSEGIS data base contains no information on experience. It does contain data on degree level for all professional instructional staff, which includes not only classroom teachers but also other personnel, such as principals and guidance counselors.[4]

Measure 3 therefore counts the number of such staff per pupil, with each staff member counted according to degree level. This raises the issue of how much extra credit should be given. In this measure, staff members are weighted in proportion to estimated years of education: 14 years for less than a bachelor's degree, 16 years for a bachelor's degree, 18 years for a master's degree, and 21 years for a doctorate.

M4. Current Expenditures with Salaries Controlled by Degree Level

The preceding measure has two obvious defects which this one attempts to correct: the weighting of different degree levels was arbitrary, and it omitted

entirely all educational resources except the instructional staff. It seems likely that one of the best estimates of the educational value of staff with higher degrees might be provided by the national average salaries for teachers at each degree level. In this measure the instructional staff is weighted by the national average salary for each degree level: $9,613 for less than a bachelor's degree, $8,790 for a bachelor's degree, $11,292 for a master's degree, $12,893 for a doctorate (figures taken from *Current Wage Developments*, September 1972).[5] The higher average salaries for teachers with less than a bachelor's degree may reflect the fact that this group tends to be older and more experienced than the typical bachelor level teacher. This suggests that an adjustment based on years of experience would be appropriate. Census/ELSEGIS, however, contains no information on experience.

This weighting of the instructional staff by national average salary for each degree level gives this measure the units of dollars per pupil – the same units as for other current expenditures. Thus it is possible to combine the other current expenditures with the salary weighted instructional staff to provide a more comprehensive measure of educational resources. With this addition, the measure includes all the educational resources included in the original "current expenditure" measure. Of course, the part of current expenditures that is other than for staff is not corrected for geographic cost variations, but since this component typically represents only about 34 percent of current expenditures ($240 out of a total of $702 per pupil) the failure to correct for cost variations may not be too serious. It appears preferable to include these costs, even in an uncorrected form, rather than to omit them entirely. Moreover, there is reason to believe that there is less variation from place to place in the price of noninstructional items than in instructional salaries.

As a simple example of the weighting procedure, assume that a district employs three instructional staff and spends a total of $10,000 for other instructional expenditures. Its actual expenditures and weighted expenditures are therefore as follows:

	Actual	Weighted
Teacher (B.A.)	$ 9,600	$ 8,790
Teacher (B.A.)	$ 9,900	$ 8,790
Teacher (M.A.)	$12,500	$11,292
Other instructional expenditures	$10,000	$10,000
	$42,000	$38,872

This measure is probably one of the most satisfactory that is possible within the limits of the present ELSEGIS data base. However, it has one weakness that might be desirable to correct. It ignores any variations among districts in the quality of teachers within a given degree level. Some school districts may systematically hire better quality teachers, and such a difference in quality might be reflected in the salary paid for teachers at a given degree level. The next measure attempts to adjust for this consideration.

M5. Current Expenditures with Salaries Controlled by Degree Level and Adjusted for "Quality"

This measure is the same as the preceding one except that the salary weights are corrected to include possible variations in teacher "quality" as these are reflected in teacher salaries. To obtain the "quality" factor, the actual current expenditure for instructional staff in each school district is compared with the salary budget that would be predicted on the basis of the actual mix of degree levels and an "average" salary for each degree level. The ratio of the actual to predicted salary expenditures is treated as a "quality" factor that is used to multiply the teacher weights. The "average" salary for each degree level was calculated for each of four urbanization categories (center city SMSA, suburban SMSA, other urban, and rural[6]) in each of nine geographic regions[7] of the country. To calculate these average salary factors for each of the 36 urbanization and regional categories, the total professional instructional staff salary expenditure for all school districts in each of the 36 categories was compared with the salary that would be predicted if all staff at each degree level were paid the national *average* salary for that degree level. The ratio between the actual and the predicted salary epxenditure for each regional and urbanization category was used as a local salary factor which was multiplied by the national average salary for each degree level to produce the estimated local salary level used in the predictions.[8] Mathematically this approach is equivalent to using the total current expenditures (as in measure 1) but with the actual teacher salaries adjusted by a local salary factor which corrects for regional and urbanization variations in the average price of instructional staff.

Analysis of the results produced by this measure suggests, however, that it probably did not produce any improvement over the preceding simpler measure. Indeed there is some evidence that the effort to correct for differences in teacher quality may actually have introduced almost random fluctuations in the esti-

mated educational resources. These fluctuations may be related to such factors as unionization, but the Census/ELSEGIS file contains no data on unionization.

M6. A Composite Measure

Since each of the preceding measures has different defects, it is possible that some mixture of those five might produce a better measure than any single one of them. To develop such a composite measure an analysis was made to find what mixture of the preceding five would be most successful in explaining their total variance.[9] The result was a composite to which M1, M2, M3, M4, and M5 contributed 19 percent, 18 percent, 20 percent, 23 percent and 20 percent, respectively. As it turned out, this composite actually produced results very similar to M4. Although mathematically it seems to be slightly superior to measure 4 in explaining the total variance, the differences are too small to be very significant.

Thus, due to its intuitive appeal it appears that measure 4 is the most satisfactory of the measures and, moreover, it appears to be almost as good as the best possible composite measure.[10] For this reason, measure 4 has been used in the presentation of results for those cases where the displays are limited to a single measure.

The Dependence on District Size and Type

To show the sensitivity of the results to the different resource measures a separate equality/inequality indicator was developed for each of the six measures and most of the analysis was duplicated for each of these indicators. As mentioned earlier, the basic procedure of the analysis was to define the indicator as the ratio of resources actually provided to the average or normal level of resources for districts of the same grade level coverage and size. For each resource measure, therefore, a model of the normal or average per-pupil resource level for each type and size of school district was first developed.

Table I shows that, as expected, the average resources per student tend to be substantially lower in elementary school districts than in districts with only secondary school students. The unified districts, of course, show an intermediate level of resources. This same relationship holds regardless of which of the five different resource measures is used.

The average for each resource measure also depends on the district size. The original intent in the development of a size-dependent norm had been to correct or

Table I. National Average Resources Per Pupil, by District Type

	Grade Level Classification of District		
	Elementary	Unified	Secondary
M1. Current expenditures ($)	662	705	912
M2. Teachers	.045	.045	.049
M3. Instructional staff weighted by degree level	.050	.051	.059
M4. Current expenditures, with staff salary controlled ($)	667	717	881
M5. Current expenditures, with staff salary controlled, plus urban/region adjustment ($)	625	706	886

compensate for various economies and diseconomies of scale. Variation in the average resource levels as a function of district size, however, proved to be substantially higher than had been expected. Table II lists and Figure 3 shows graphically how the five different resource measures depend on district size. (Although the present study was not designed to single out districts, it was possible to identify those comprising the ninth size category as New York City, Chicago, Los Angeles, Detroit, Philadelphia, Houston, and Dade County (Miami).) The graph in the upper left of Figure 3 shows that current dollar expenditures per pupil tend to be highest in the very large school districts and lowest in the small school districts. Moreover, the differences are quite large, ranging from an average of $670 per pupil in the smallest districts to an average of $900 in the largest. The graph in the upper right shows quite clearly, however, that this simple representation in dollars is misleading. The average number of teachers per pupil is actually highest in the smallest school districts. Evidently the lower cost of teachers in these areas makes it possible to provide more teachers for less money. The lowest number of teachers per pupil tends to occur in districts enrolling about 50,000 pupils. The ratio increases again for the larger districts. The data base used here does not permit examination of possible causes of this increase, such as greater disciplinary problems, higher administrative expenses, stronger unions, or the perception of a greater need for specialized educational services.

One explanation of the lower cost of education in the small school districts could be that such districts tend to hire teachers of lower quality than the large school districts. The plot in Figure 3 for education-weighted staff suggests rather strongly, however, that,

Table II. Resources Per Pupil, by District Size

Size Range	Number of Pupils	M1	M2	M3	M4	M5
< 1,500	4,358,629	677	.0521	.0580	770	734
1,500 - 2,499	4,036,727	647	.0463	.0521	701	680
2,500 - 4,999	7,231,660	676	.0456	.0519	709	692
5,000 - 9,999	7,671,438	687	.0442	.0509	703	692
10,000 - 24,999	7,898,439	703	.0436	.0506	700	691
25,000 - 49,999	3,450,862	674	.0422	.0489	669	653
50,000 - 99,999	3,704,445	679	.0417	.0483	672	666
100,000 - 199,999	2,517,104	731	.0427	.0492	705	715
over 199,999	3,332,382	920	.0463	.0538	835	837

insofar as degree level is an indicator of teacher quality, this is probably not the case. The shape of the curve is almost indistinguishable from the one for M2, teachers per pupil. Thus, the mix of degree levels is probably not a critical factor in the differences between large and small districts.

This result may seem counterintuitive to one who identifies small districts with rural ones. That identification, however, is faulty. For example, the region with the smallest (pupil-weighted) average district size is New England, which has an above-average level of urbanization (see below). When districts are analyzed by degree of urbanization there does indeed appear to be a tendency toward lower degree levels in rural areas. Using the ratio of the number of teachers with an M.A. to the number with a B.A. as a measure (there are few in the Ph.D. or less-than-B.A. categories), central cities and suburbs of SMSAs score .42, whereas other urban districts score .33, and rural ones only .23.

The fact that differences in degree levels do not appreciably affect the shape of the resource curves in Figure 3 increases the likelihood that the observed variations are due to economies and diseconomies of scale. This in turn increases the legitimacy of adjustments in the measures based on size.

When the measure of educational resources is expanded, as in measure 4, to include expenses other than staff salaries, the differences between small and moderate sized districts tend to decrease slightly. This is due to the fact that the per-pupil dollar value of the one third of expenditures that is not for staff salaries in small districts is about the same as, or only slightly higher than, in midsized ones. The difference between very large and moderate sized districts, on the other hand, increases. This indicates that the disparity between these districts in resources other than staff salaries must be greater than the disparity in staff. The curve for measure 5, which attempts to include the effect of teacher "quality" (as it is reflected in salaries), is actually almost indistinguishable from the one shown for measure 4.

These variations in the average level of each resource measure as a function of district type and size are important in the interpretation of the results because they define the norm from which individual variations are measured. In effect the analysis assumes that these average variations in the resources provided are a proper reflection of different educational cost and benefit relationships in districts of different sizes. Readers who disagree with this assumption may prefer to interpret these variations as an indication of educational inequality in districts of different sizes.

In the present analysis, however, these average resource levels were used to define a size-dependent norm for each resource measure, and an equality/inequality indicator for each school district was calculated by dividing the actual resource level for the district by the corresponding "norm" for districts of the same grade level coverage and size.[11] This process produced a total of six equality/inequality indicators for each school district.

An additional analysis was made to determine how the ratio of actual attendance to enrollment varied with district size. Figure 4 indicates quite clearly that student absenteeism is a more serious problem in very large school districts than in others. This suggests that some of the increase in costs for very large districts may reflect disciplinary problems or attempts by administrators to provide extra resources for disadvantaged students.

Socioeconomic Variables

It is of considerable interest to study not only the magnitude of variation in per-pupil resource measures but also the relationship of such variation to the pupils' socioeconomic background and to district fiscal circumstances. Is there bias in the distribution of resources in favor of or against certain groups, such as minorities? Have efforts at equalization been fruitful? These are the types of questions to which the analysis was addressed. Ten variables were selected as indicators

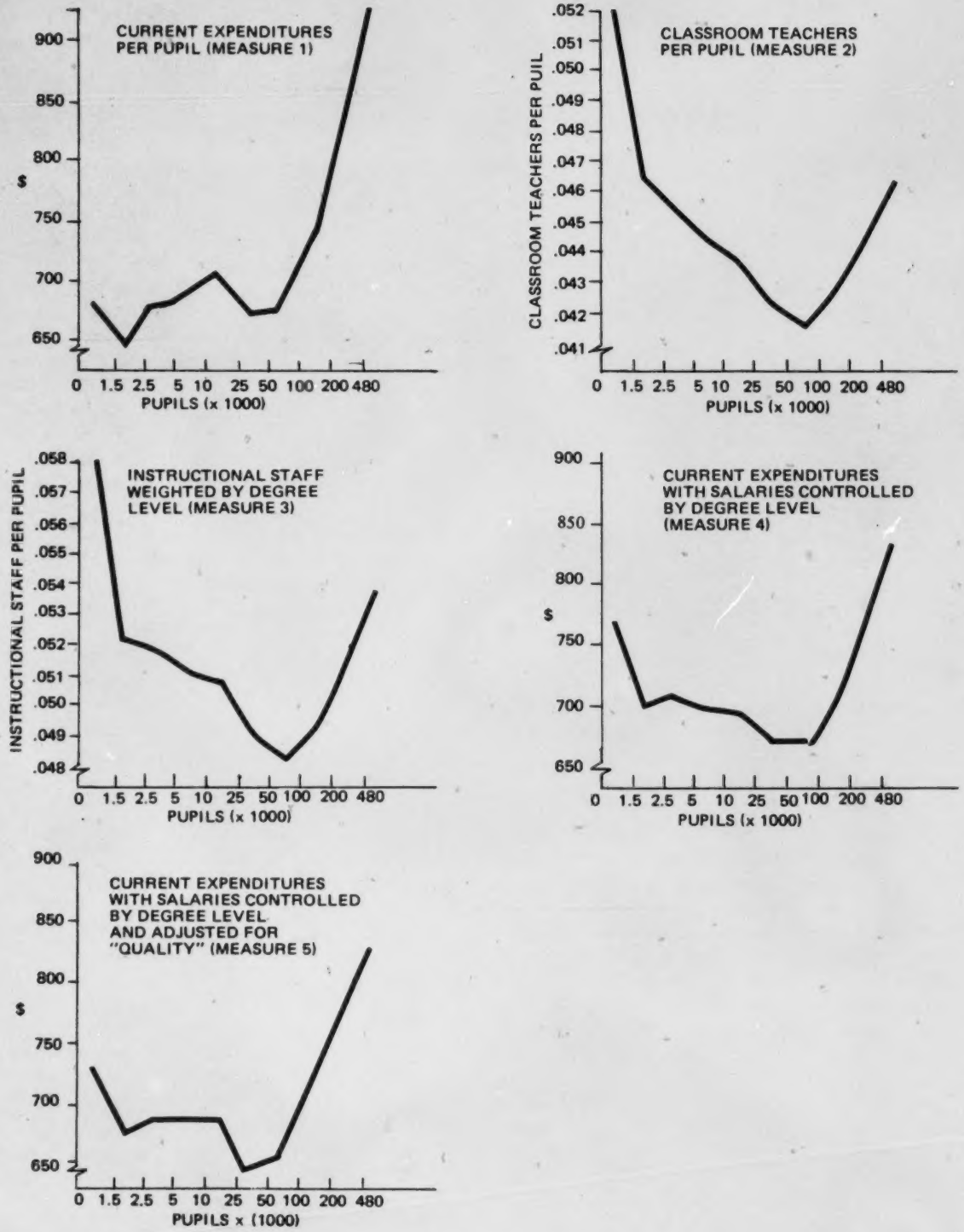


Figure 3. District Resources Versus Enrollment.

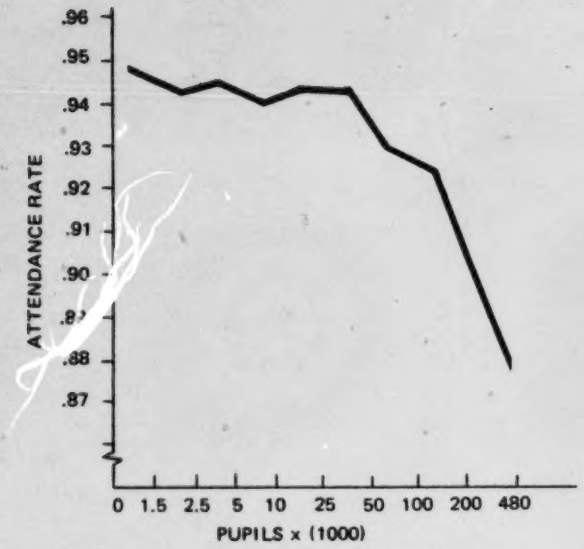


Figure 4. Attendance Rate by District Size.

of the socioeconomic background of pupils in each school district.

- The percentage of the total district population which was black was included, since that group historically has received lower levels of educational resources.
- The percentage of the total district population which was Spanish-speaking was included for similar reasons. This group may also require extra resources due to the difference in language from that normally taught in the schools.
- Because of the known link between poverty and educational disadvantage, the proportion of the total district population in families below poverty level (as used in the Fourth Count Census) was included.
- The products of percent black with percent poverty populations and of percent Spanish-speaking with percent poverty were included to determine the relation of these dual factors to resources received.
- In order to measure the extent of the link between community wealth and pupil resources a measure of ability to pay for education was constructed. This measure is a composite of equalized property value per pupil (EPV),[12] per-capita income, per-pupil income,[13] and proportion of families with over $15,000 of income in 1969. The particular combination of these variables which was used was determined by a technique which relates them to another variable related to wealth, namely, local revenue received by the school district.[14] These four contributed 29 percent, 36 percent, 24 percent, and 11 percent, respectively, to the "ability-to-pay" or "wealth" index.
- A measure of the financial effort exerted by each district was also constructed. For this measure the quotient of non-Federal revenue (local plus State) by ability to pay was used. An alternative which was considered (and computed, but not used) was the corresponding quotient with only local revenue in the numerator. That approach, however, has several shortcomings. For example, it would not permit a comparison of effort across States. This is due to the fact that the contribution of State revenue to total revenue ranges from a low of 8 percent in New Hampshire to 66 percent in Delaware, excluding the District of Columbia and Hawaii, both of which are single districts. Localities anticipate State education funds when they set local school tax rates; furthermore, State revenues represent a return to localities of taxes they pay to the State. Therefore, a district in, say, New Hampshire which raises $700 of local revenue per pupil is probably exerting no more effort than a district of equal wealth in Kentucky which raises $450 in local revenue per pupil. The reason is that the Kentucky district is probably paying about $250 in additional State taxes, an amount which is returned to it as State education revenue. In general, of course, wealthy districts tend to receive less, and poor districts more, in State contributions than they paid in State taxes for education. Thus, when State revenues are considered in the measure of local effort, poor districts tend to score a little higher and wealthy districts a bit lower than they would if effort were measured by actual dollars raised by each district (including education's share of State taxes *paid* by the district, regardless of the actual amount *received* by the district from the State). This is regarded as a desirable effect, since it tends to compensate for the fact that a district that is twice as wealthy as another can probably raise twice the local funds for education with less effort.
- The degree of urbanization was also included in the list of variables. Each district is assigned a score ranging from 0 to 3 depending on the percent of population residing in urbanized areas and on the district's status as rural, small town, suburban SMSA, or central city SMSA.
- Another variable considered was the ratio of pupils in attendance to pupils enrolled.
- Finally, enrollment was included in order to check on the adequacy of the stratification method used to remove the effect of district size on resources.

Analysis Results

The Census/ELSEGIS data base was used in the analysis of inequality for each of the States separately as well as for the Nation and for each of the nine geographic regions. The entire set of tabulations, which contains more information than can be presented and interpreted here, is reproduced in an appendix as reference material for readers who may wish to investigate specific issues for particular States. The discussion here focuses on the national analysis. The results are presented in tables that use a standard format for national, regional, and State information – the same format employed in the appendix.

Table IIIa displays the nationwide variation in per-pupil resources and revenues. The first data column gives the mean, relative to the national norm, of each of the six resource and five revenue variables. These values are, of course, all 1.0 in the national analysis, since the national values are taken as the norm of comparison. In regional and State tabulations the means would be expected to be different from 1.0. To assist in understanding the presentation, the results for the Middle Atlantic region (New York, New Jersey, and Pennsylvania) are shown as Table IIIb. As can be seen from the first column, pupils in the Middle Atlantic States received about 20 percent more than the national norm of resources, as measured by current

Table IIIa. Variation in Resources and Revenues, the Nation.

Per Pupil Resource Measure	Mean	Percent Variation	Gini	Mean Amount Received by Pupils in Percentile Interval									
				0-10%	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
M1 Current Expenditures . .	1.000	27.9	.1478	0.61	0.74	0.81	0.87	0.94	1.00	1.05	1.13	1.25	1.58
M2 Classroom Teachers . . .	1.000	16.9	.0695	0.79	0.88	0.92	0.95	0.98	1.01	1.04	1.07	1.13	1.24
M3 Instructional Staff Weighted by Degree Level	1.000	17.0	.0734	0.79	0.87	0.91	0.94	0.98	1.01	1.04	1.08	1.14	1.25
M4 Expenses With Salaries Controlled by Ed Level	1.000	21.2	.1059	0.73	0.82	0.87	0.91	0.94	0.99	1.03	1.10	1.20	1.42
M5 Same With Region/Urban Sal Vartn Adjustment .	1.000	23.3	.1202	0.70	0.79	0.85	0.89	0.94	0.98	1.03	1.11	1.22	1.49
M6 Composite Measure. . . .	1.000	18.6	.0933	0.76	0.84	0.88	0.92	0.96	0.99	1.03	1.09	1.18	1.35
Local	1.000	58.4	.3122	0.21	0.41	0.58	0.71	0.86	1.00	1.17	1.37	1.56	2.12
State	1.000	43.3	.2282	0.39	0.62	0.73	0.81	0.88	0.97	1.09	1.24	1.41	1.88
Federal	1.000	90.2	.3988	0.15	0.30	0.42	0.56	0.71	0.90	1.15	1.45	1.78	2.58
Total non Federal	1.000	34.6	.1864	0.52	0.66	0.75	0.84	0.92	1.00	1.09	1.19	1.33	1.70
Total	1.000	31.5	.1673	0.58	0.70	0.77	0.85	0.92	0.99	1.08	1.17	1.31	1.63

Table IIIb. Variation in Resources and Revenues, Mid-Atlantic Region

M1 Current Expenditures . .	1.279	25.4	.1324	0.69	0.75	0.82	0.87	0.95	0.97	1.04	1.13	1.25	1.52
M2 Classroom Teachers . . .	1.072	10.4	.0592	0.83	0.88	0.92	0.95	0.98	1.02	1.05	1.10	1.12	1.15
M3 Instructional Staff Weighted by Degree Level	1.079	11.6	.0660	0.81	0.87	0.90	0.95	0.98	1.02	1.06	1.11	1.12	1.18
M4 Expenses With Salaries Controlled by Ed Level	1.203	19.9	.1067	0.72	0.80	0.93	0.90	0.99	1.04	1.04	1.11	1.19	1.38
M5 Same With Region/Urban Sal Vartn Adjustment .	1.204	24.6	.1261	0.69	0.75	0.82	0.88	0.97	1.02	1.04	1.13	1.25	1.46
M6 Composite Measure . . .	1.160	16.4	.0897	0.75	0.82	0.86	0.92	0.99	1.05	1.06	1.08	1.15	1.32
Local	1.297	42.5	.2285	0.39	0.58	0.70	0.80	0.90	1.05	1.18	1.20	1.34	1.67
State	1.403	44.0	.2386	0.30	0.49	0.69	0.86	1.00	1.10	1.12	1.24	1.48	1.73
Federal	0.805	93.7	.4927	0.09	0.19	0.28	0.39	0.50	0.64	0.97	1.94	2.11	2.89
Total non Federal	1.341	24.5	.1336	0.65	0.74	0.80	0.88	0.93	1.02	1.13	1.16	1.20	1.46
Total	1.304	23.9	.1305	0.66	0.74	0.80	0.88	0.97	1.02	1.12	1.20	1.21	1.41

expenses with salaries controlled by education level of staff. This is M4, the measure found to be most suitable for analysis in this study.

The second column shows the percent variation in resources and revenues. This figure is the standard deviation divided by the mean, expressed as a percent. It is a useful measure of inequality. For example, the national variation of 21.2 percent in M4 can be interpreted as meaning that roughly one-sixth of the Nation's pupils received 21.2 percent more resources, and another sixth received 21.2 percent less, than the national norm. Similarly, about one-sixth received 90.2 percent more, and one sixth received 90.2 percent less Federal revenue than average. (The word "norm" is used for resources since each district's score is based not on the national average, but on the value expected based on its size and grade-level coverage; revenue scores, on the other hand, are based on the simple national average.)

The third column lists the Gini index for each variable.[16] This measure of variation ranges from zero to 1, with a higher score indicating greater disparity. A score of zero would indicate that all districts received equal scores, while a score that approached 1 would indicate that a very small proportion of districts was receiving almost all the resources. The Gini score for the Nation on measure 4 is .1059. This indicates that the imbalance in resource distribution is not very large.

Similar but more detailed information is given in the last 10 columns, which present results by deciles of the student population. These are to be interpreted as follows. The .73 under the column headed "0-10%" indicates that, on measure 4, the 10 percent of pupils in the Nation who received the least resources received an average of 73 percent of the normal amount. At the other extreme, the 10 percent who received the most resources (the "90-100" column) received 142 percent of the norm on measure 4.

A brief reference to the Middle Atlantic tabulations may help to clarify the interpretation of Table III. The display shows that pupils in the Middle Atlantic States received about 1.2 times the national norm of resources – again, using measure 4 – and that the variation in that region was roughly 20 percent. That is, one sixth of the Middle Atlantic pupils received 20 percent more and one sixth received 20 percent less than the norm for the Middle Atlantic region – not the national norm. Similarly, the 10 percent of pupils who received the least resources, under measure 4, received 72 percent of the Middle Atlantic norm.

One result that stands out in Table III is the much greater variation in revenues than in resources. Whereas the resources vary by about 21 percent throughout the Nation, the revenues vary by 32 to 09 percent. It is also noteworthy that total revenues vary by 32 percent, while revenues by the individual sources vary much more widely: local, by 58 percent; State, by 43 percent; and Federal, by 90 percent. The fact that variation in total revenue is less than that in each of its components indicates that State and Federal revenues must be counteracting the disparities in local revenue. In other words, those districts that can raise the least local revenue tend to get more State and Federal aid, and districts with greater local revenue get less. Thus, State and Federal aid programs are partly successful in reducing disparities, but not totally successful since there remain substantial disparities in total revenues and in the resources that these revenues provide.

It is also clear from Table III that State revenues have a far more significant effect than Federal revenue do in removing disparities. The variation of 58.4 percent in local revenues is reduced to 34.6 percent when State revenues are included. This figure reduces further to 31.5 percent when Federal revenue is also included. Thus, the influence of State revenues accounts for about 88 percent of the total reduction in variation, with Federal revenue accounted for by the fact that State revenues account for 39 percent of total revenues, whereas Federal revenue accounts for only 7 percent of the total nationally.

Returning to M4, Table III shows less variation than had been expected. This is partly due to the removal of variation due to size and grade-level coverage. If the adjustments for size and grade level are accepted as valid, it appears that the inequality of resource distribution was not excessive, except perhaps at the extremes. Pupils in the 80-90 decile received only 46 percent more than those in the 20-30 decile. Yet the 90-100 decile received 95 percent more than the 0-10 decile.

Table IV shows the results of the analysis of variance of resources with regard to socioeconomic variables. Tabulations are given for the Nation and, for comparison, for Mississippi. The table shows the mean score on each resource measure for students in districts falling in the low, medium, or high range on each of the 10 socioeconomic variables. The "low" category includes the 20 percent of pupils in districts with the lowest scores for the variable in question. The "high" category represents the 20 percent in districts with the highest scores. The "medium" are all those in between. Thus, with reference to the first row, under the column headed "M4," pupils in districts with low ability to pay received 88 percent of the national norm, whereas

Table IVa. Variation in Resources by Socioeconomic Status, Nationally (Page 1 of 2)

Socio-Economic Characteristic	Resource Variable M1 Current Expenses Mean	% +/−	M2 Classroom Teachers Mean	% +/−	M3 Education WGTD Staff Mean	% +/−	M4 $ With Salary Controlled by Ed Mean	% +/−	M5 $ With Salary ADJ for URB/REG Mean	% +/−	M6 Composite Measure Mean	% +/−
Low Ability to Pay	0.7911	24.1	0.9509	27.7	0.9396	26.6	0.8812	24.0	0.8604	18.8	0.8912	22.1
Med Ability to Pay	0.9944	23.5	0.9899	12.2	0.9880	12.5	0.9882	17.8	0.9871	20.4	0.9889	14.9
High Ability to Pay	1.2237	25.0	1.0806	13.2	1.0974	13.9	1.1538	19.0	1.1762	22.8	1.1420	16.6
Correlation With Ability to Pay	0.5314		0.2432		0.3045		0.4395		0.4749		0.4585	
Low Financial Effort	0.7385	22.8	0.9518	12.6	0.9383	13.2	0.8387	15.4	0.8107	15.8	0.8635	14.0
Med Financial Effort	0.9849	19.1	0.9912	18.0	0.9910	17.6	0.9812	16.6	0.9764	16.4	0.9652	15.5
High Financial Effort	1.3048	23.3	1.0759	14.6	1.0898	14.8	1.2171	19.1	1.2581	21.1	1.1607	16.0
Correlation with Financial Effort	0.6857		0.2518		0.3009		0.6177		0.6643		0.5841	
Low ADA/ADM	1.0597	28.0	1.0167	15.1	1.0190	15.7	1.0558	22.2	1.0617	23.9	1.0416	19.0
Med ADA/ADM	0.9828	28.4	1.0047	12.7	1.0058	13.3	0.9955	19.6	0.9932	23.4	0.9973	17.0
High ADA/ADM	0.9899	24.2	0.9704	27.2	0.9646	26.2	0.9571	23.3	0.9567	20.6	0.9662	21.8
Correlation With ADA/ADM	−0.0801		−0.1243		−0.1354		−0.1552		−0.1303		−0.1432	
Low Urbanization	0.9020	29.4	0.9833	28.1	0.9720	27.3	0.9467	26.5	0.9535	23.9	0.9544	24.0
Med Urbanization	1.0191	27.8	1.0021	13.0	1.0057	13.6	1.0072	19.9	1.0049	23.8	1.0071	17.2
High Urbanization	1.0388	24.5	1.0118	12.4	1.0120	13.1	1.0312	18.6	1.0299	20.3	1.0241	16.1
Correlation With Urbanization	0.2141		0.0633		0.0873		0.1674		0.1323		0.1539	
Low Enrollment	0.9996	26.6	1.0018	28.7	1.0017	27.5	1.0010	25.4	0.9995	23.4	1.0009	23.5
Med Enrollment	0.9987	29.8	0.9983	12.4	0.9991	13.3	0.9983	20.7	0.9982	24.6	0.9987	17.6
High Enrollment	1.0024	22.9	1.0016	12.1	1.0021	12.6	1.0037	17.7	1.0040	18.7	1.0028	15.5
Correlation With Enrollment	0.0740		0.0988		0.1037		0.1006		0.0755		0.1031	
High Degree of Poverty	0.7784	22.2	0.9664	26.6	0.9536	25.5	0.8816	23.1	0.8643	18.1	0.8970	21.6
Med Degree of Poverty	1.0138	24.0	0.9961	13.6	0.9964	14.0	1.0028	18.6	1.0021	20.9	1.0012	16.0
Low Degree of Poverty	1.1784	26.8	1.0465	13.0	1.0584	13.9	1.1097	20.6	1.1274	25.0	1.0992	17.5
Correlation With Degree of Poverty	−0.4157		−0.1165		−0.1533		−0.2906		−0.2989		−0.2935	
High Proportion Black	0.9183	27.6	0.9874	12.9	0.9856	13.6	0.9662	19.9	0.9608	21.2	0.9669	17.4
Med Proportion Black	1.0142	28.8	1.0045	18.6	1.0054	18.4	1.0068	22.2	1.0068	24.3	1.0072	19.4
Low Proportion Black	1.0372	23.7	1.0003	15.0	0.9993	15.4	1.0129	18.7	1.0169	21.5	1.0113	16.5
Correlation With Black	−0.1663		−0.0577		−0.0634		−0.0962		−0.0977		−0.1092	
High Proportion Spanish	0.9909	23.3	1.0026	26.3	0.9969	25.3	0.9841	22.9	0.9775	19.3	0.9905	21.2
Med Proportion Spanish	1.0394	28.6	1.0086	13.1	1.0134	13.8	1.0281	20.6	1.0328	24.2	1.0235	17.6
Low Proportion Spanish	0.8891	26.2	0.9727	14.6	0.9639	15.1	0.9311	19.0	0.9222	21.0	0.9367	16.9
Correlation with Spanish	−0.0492		0.0324		0.0134		−0.0350		−0.0540		−0.0230	
High Poverty x Black	0.8687	27.0	0.9769	25.7	0.9716	24.4	0.9355	24.0	0.9255	20.4	0.9405	21.7
Med Poverty x Black	1.0258	27.5	1.0061	13.9	1.0074	14.6	1.0133	20.4	1.0144	23.6	1.0125	17.6
Low Poverty x Black	1.0520	25.6	1.0060	14.6	1.0073	15.1	1.0242	19.7	1.0292	22.9	1.0216	17.2
Correlation With Poverty x Black	−0.2365		−0.0954		−0.1083		−0.1646		−0.1619		−0.1753	
High Poverty x Spanish	0.9778	23.6	1.0073	26.2	1.0012	25.1	0.9825	23.0	0.9754	19.6	0.9699	21.3
Med Poverty x Spanish	1.0050	28.8	0.9985	13.6	1.0000	14.3	1.0042	20.7	1.0056	24.0	1.0025	17.8
Low Poverty x Spanish	1.0050	28.8	0.9985	13.6	1.0000	14.3	1.0042	20.7	1.0056	24.0	1.0025	17.8
Correlation With Poverty x Spanish	−0.0825		0.0628		0.0381		−0.0273		−0.0539		−0.0164	

Table IVb. Variation in Resources by Socioeconomic Status, Mississippi (Page 2 of 2)

Socio-Economic Characteristic	Resource Variable M1 Current Expenses Mean	$ +/-	M2 Classroom Teachers Mean	% +/-	M3 Education WGTD Staff Mean	% +/-	M4 $ With Salary Controlled by Ed Mean	% +/-	M5 $ With Salary ADJ for URB/REG Mean	% +/-	M6 Composite Measure Mean	% +/-
Low Ability to Pay	0.6938	15.7	0.8945	10.6	0.8843	11.6	0.8317	14.5	0.8151	13.9	0.8319	12.0
Med Ability to Pay	0.6171	15.8	0.8736	8.1	0.8563	9.1	0.7669	11.2	0.7284	14.2	0.7788	9.9
High Ability to Pay	0.6962	8.7	0.9329	5.1	0.9332	4.5	0.8472	5.6	0.8001	7.9	0.8522	4.7
Correlation With Ability to Pay	0.1129		0.2032		0.2692		0.1442		0.0588		0.1726	
Low Financial Effort	0.5984	10.7	0.8988	6.9	0.8733	7.2	0.7668	7.5	0.6978	8.3	0.7796	6.8
Med Financial Effort	0.6303	15.0	0.8772	9.2	0.8687	10.0	0.7792	12.0	0.7434	13.2	0.7696	10.6
High Financial Effort	0.7520	10.4	0.9179	7.0	0.9091	9.0	0.8751	10.0	0.8725	9.6	0.8720	7.8
Correlation With Financial Effort	0.6106		0.1921		0.2380		0.4919		0.6283		0.4846	
Low ADA/ADM	0.6785	13.4	0.8664	9.1	0.8589	10.4	0.8086	13.4	0.7989	12.4	0.8094	10.9
Med ADA/ADM	0.6539	15.2	0.8957	7.9	0.8861	8.8	0.8010	10.8	0.7651	13.2	0.8100	9.6
High ADA/ADM	0.6010	16.5	0.8948	9.6	0.8710	10.2	0.7660	13.1	0.7062	15.4	0.7811	11.3
Correlation With ADA/ADM	−0.0541		0.2468		0.1889		0.0930		−0.0755		0.0941	
Low Urbanization	0.0444	17.1	0.8967	8.5	0.8728	9.7	0.7930	12.5	0.7569	15.1	0.8035	10.4
Med Urbanization	0.6226	15.7	0.8746	9.1	0.8612	10.1	0.7758	12.8	0.7381	14.1	0.7644	10.9
High Urbanization	0.7291	5.7	0.9278	5.0	0.9320	3.8	0.8592	3.2	0.8294	5.4	0.8638	2.8
Correlation With Urbanization	0.3466		0.1990		0.2971		0.2854		0.2421		0.3002	
Low Enrollment	0.6874	15.2	0.9060	7.8	0.8996	9.3	0.8287	11.0	0.7807	14.3	0.8318	9.1
Med Enrollment	0.6278	15.2	0.8822	8.6	0.8665	9.4	0.7811	12.2	0.7443	14.3	0.7904	10.5
High Enrollment	0.6705	14.7	0.8955	9.0	0.8896	9.3	0.8076	11.1	0.7869	11.5	0.8176	9.9
Correlation With Enrollment	0.2126		−0.0044		0.1061		0.1388		0.1845		0.1348	
High Degree of Poverty	0.7229	12.7	0.8991	9.2	0.8901	10.4	0.8520	12.4	0.8460	11.3	0.8489	10.3
Med Degree of Poverty	0.6161	15.4	0.8741	8.8	0.8607	9.9	0.7689	11.8	0.7284	14.1	0.7801	10.5
Low Degree of Poverty	0.6699	12.2	0.9269	5.2	0.9162	4.8	0.8206	7.2	0.7695	9.3	0.8314	5.8
Correlation With Degree of Poverty	0.2544		−0.1683		−0.1513		0.1099		0.3014		0.0779	
High Proportion Black	0.7065	14.9	0.8801	11.2	0.8727	12.4	0.8315	15.0	0.8278	13.6	0.8300	12.8
Med Proportion Black	0.6415	15.6	0.8816	8.6	0.8701	9.7	0.7876	12.2	0.7547	14.0	0.7967	10.5
Low Proportion Black	0.6066	12.1	0.9045	7.8	0.8826	7.9	0.7756	8.4	0.7061	10.1	0.7881	8.0
Correlation With Black	0.3764		−0.1533		−0.0996		0.1791		0.4344		0.1594	
High Proportion Spanish	0.6748	14.9	0.9242	7.1	0.9106	7.5	0.8308	9.7	0.7818	13.4	0.8352	8.4
Med Proportion Spanish	0.6427	15.4	0.8879	7.7	0.8777	8.9	0.7908	11.2	0.7558	13.5	0.8008	9.7
Low Proportion Spanish	0.6418	15.7	0.8750	8.7	0.8674	9.9	0.7860	12.4	0.7545	14.1	0.7951	10.7
Correlation With Spanish	0.1882		0.2432		0.1972		0.1924		0.1243		0.2078	
High Poverty x Black	0.7172	13.1	0.8932	10.0	0.8862	10.9	0.8445	13.1	0.8403	11.8	0.8430	10.9
Med Poverty x Black	0.6364	16.0	0.8756	8.2	0.8796	9.4	0.7826	11.8	0.7472	14.2	0.7927	10.4
Low Poverty x Black	0.6150	11.6	0.9102	7.3	0.8956	7.7	0.7871	8.3	0.7185	9.0	0.7995	7.6
Correlation With Poverty x Black	0.3713		−0.0948		−0.0612		0.2129		0.4226		0.1880	
High Poverty x Spanish	0.6652	17.2	0.8945	8.7	0.8844	9.8	0.8093	13.1	0.7775	15.3	0.8155	11.2
Med Poverty x Spanish	0.6440	15.1	0.8884	8.5	0.8760	9.4	0.7926	11.6	0.7558	13.5	0.8012	10.1
Low Poverty x Spanish	0.6440	15.1	0.8884	8.5	0.8760	9.4	0.7926	11.6	0.7558	13.5	0.8012	10.1
Correlation With Poverty x Spanish	0.3415		0.1155		0.1115		0.2651		0.3141		0.2537	

those in the wealthiest districts received 115 percent of the norm, as indicated by M4. Immediately following the mean score for each group is the percent variation *within* each group (under the columns headed "% +/-").

Table IV also gives the correlation between each resource and each socioeconomic variable. For example, the correlation between poverty and resource measure 4 is -.29, nationally.[17] In other words, districts with higher concentrations of poverty populations tend to deliver fewer resources to their pupils. This finding at the national level is in contrast to the results for the States. For example, in Mississippi the correlation between poverty and resource measure 4 is .11, and pupils in the districts with the most poverty receive more than those in the middle or low range of poverty. Districts with the most poverty provided 86 percent of the national norm, whereas those in the middle and low poverty ranges provided only 77 and 82 percent of the norm, respectively. Does this mean that Mississippi is atypical of the Nation? The answer is no, and this brings to light an important phenomenon. That is, within States the tendency is for more resources to go to districts with high concentrations of poverty than to those in the middle range of poverty. Figure 5 shows the distribution of resources according to poverty concentration in several States. For each State the width and location on the horizontal scale of the graph are determined by the extent of variation in poverty.[18] The States depicted in Figure 5 are fairly typical of the national pattern. This figure makes clear that while in most States (with some notable exceptions) extra funds are being directed to high-poverty districts, these extra funds are dwarfed by the large disparities in resources *among* States. In interpreting the national and regional tabulations, one must keep in mind that within-State equalization may be masked by disparities among States.

In order to eliminate this masking effect, the analysis described here was repeated for the Nation and the nine regions, in a somewhat different manner. In this second analysis each State was artificially "equalized" to the national norm on each variable. To state it another way, a district's score on each resource and socioeconomic variable was compared to its State's norm rather than to the national norm. This makes it possible to analyze variations within States, ignoring variations among States. (It is useful to compare the results of this analysis, to be displayed in Tables IX through XIII, with the analysis shown here, which looks at all variation, both within and among States. The results of the within-State analysis are discussed later in more detail.)

Table V presents data on the distribution of revenues. The strong link between wealth and local revenue is evident here (correlation .7443), as is the countering effect of State and Federal revenues (negative correlation). Similar effects can be seen in the correlations with poverty and black populations, except that the State revenues do little to counteract local revenues for the black population.

More detailed information on the distribution of resources and revenues, with respect to socioeconomic status, is contained in Table VI, which displays the average resource or revenue score relative to the national norm for pupils at each decile of scores on each socioeconomic variable. Using the first row as an example, the 10 percent of pupils in districts with the lowest ability to pay received 87 percent of the normal level of resources, as measured by M4. The next 10 percent received 90 percent of the norm, etc. Note that the three lowest deciles on percent black received identical resource and revenue scores (1.01 for the resources, 1.11, 1.01, and .62 for the three revenues). This is not a statistical coincidence, but it is an artifact. It follows from the fact that the districts with the lowest proportion of black population have exactly equal percentages of blacks, namely zero. That is, 30 percent of pupils reside in districts with no blacks (or with too few to be reported in the Census Fourth Count; when the number of individuals in any category is very small, the Bureau of the Census suppresses that data to protect individuals' privacy). This phenomenon must be kept in mind when interpreting similar material for the individual states. For example, North Dakota shows no variation in resource or revenue distribution with respect to black population, except at the highest decile. This does not represent any equalization effort, but only the fact that the black population of North Dakota is extremely small (one-tenth of 1 percent) and is probably concentrated in one area.

The data in Table VI can be used to show graphically the effects of State and Federal revenues on equalization. For example, Figure 6 shows the distribution of revenues versus ability to pay.[19] The solid line, which represents local revenue, shows clearly the link between wealth and local revenues. The broken line, representing the sum of local and State revenues, illustrates the substantial contribution towards equalization made by State revenues in 1970. The dotted line shows that Federal revenue contributed a bit more

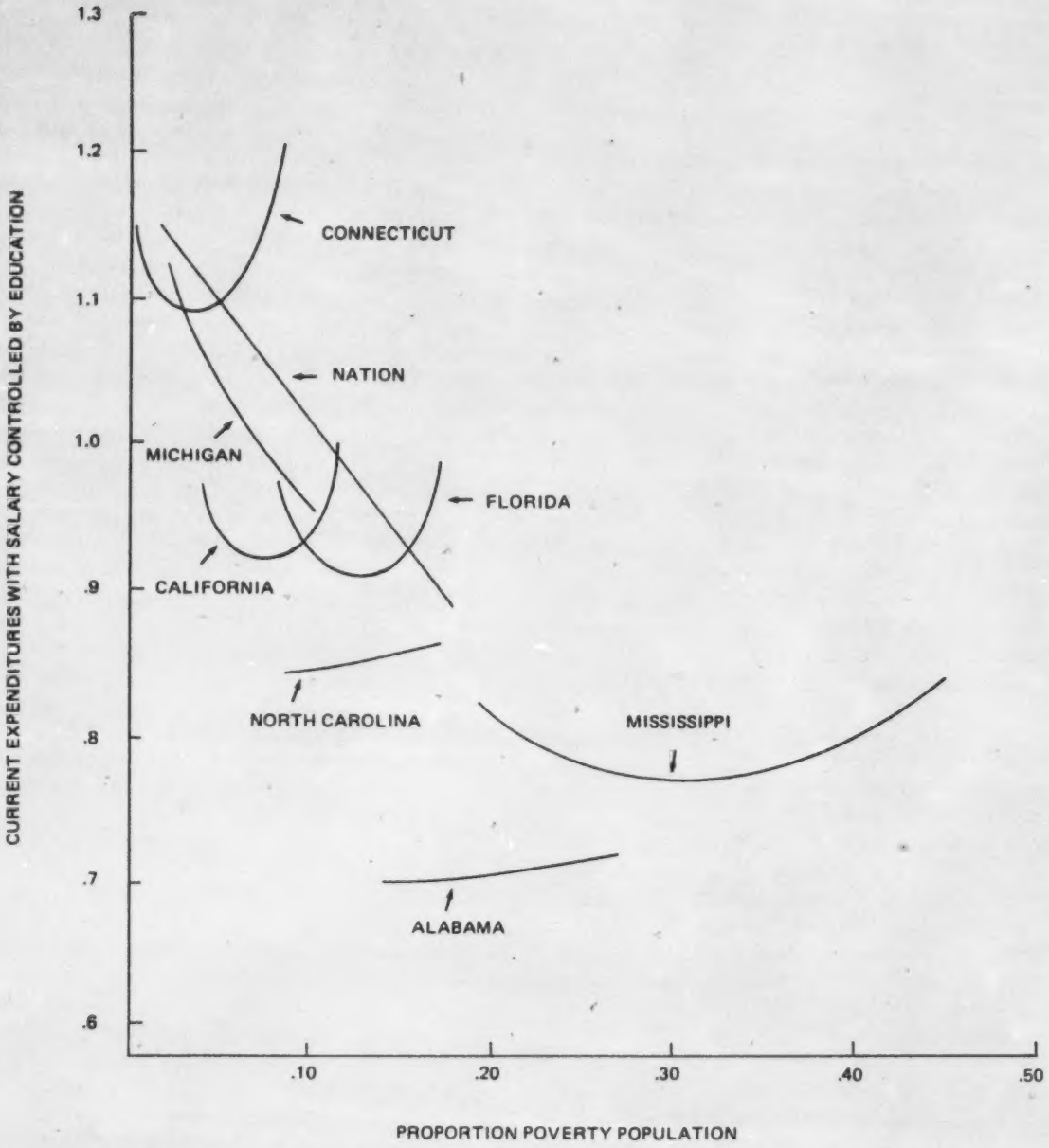


Figure 5. Distribution of Resources by Poverty Population for the Nation and Selected States.

towards equalization. Clearly, however, State revenue was the more significant in promoting equalization.

Figures 7 and 8 show similar trends in revenues versus black and poverty populations, respectively. The percentages listed along the horizontal axis are the average percent black or poverty population at each decile. There are only eight deciles shown in Figure 7 because the first three coincide; i.e., they all represent districts with no blacks. From Figure 7 it is clear that there is not a very strong bias against districts with

Table V. Variation in Revenues by Socioeconomic Status, the Nation.

Socio-Economic Characteristic	Revenue Variable: Local Mean	Local % +/-	State Mean	State % +/-	Federal Mean	Federal % +/-	Non Federal Mean	Non Federal % +/-	Total Mean	Total % +/-
Low Ability to Pay	0.4501	63.1	1.0642	37.1	1.5205	76.6	0.7051	33.2	0.7612	27.4
Med Ability to Pay	0.9796	45.2	0.9976	43.7	0.8957	86.5	0.9870	27.3	0.9808	25.8
High Ability to Pay	1.6112	37.1	0.9431	48.1	0.7927	94.9	1.3338	26.8	1.2965	25.9
Correlation With Ability to Pay	0.7443		−0.1570		−0.2720		0.6524		0.6146	
Low Financial Effort	0.5083	67.5	0.8140	25.7	1.2019	90.3	0.6352	27.7	0.6742	22.8
Med Financial Effort	1.0115	47.3	0.9328	35.3	0.9373	84.6	0.9788	22.4	0.9760	19.9
High Financial Effort	1.4574	46.0	1.3875	44.0	0.9867	99.2	1.4284	22.8	1.3980	21.6
Correlation With Financial Effort	0.5588		0.5108		−0.1076		0.8166		0.8152	
Low ADA/ADM	1.1605	50.3	1.0636	42.1	1.3130	64.7	1.1203	33.7	1.1335	30.9
Med ADA/ADM	0.9570	61.6	0.9953	45.2	0.9175	97.7	0.9729	35.1	0.9691	31.7
High ADA/ADM	0.9686	55.4	0.9504	37.0	0.9351	96.7	0.9611	30.7	0.9593	27.0
Correlation With ADA/ADM	−0.1054		−0.1312		−0.1678		−0.1721		−0.2095	
Low Urbanization	0.7424	74.9	1.0831	45.0	1.0934	104.0	0.8839	39.1	0.8983	33.8
Med Urbanization	1.0250	59.5	0.9892	43.1	0.8522	101.3	1.0101	34.8	0.9992	31.5
High Urbanization	1.1827	35.5	0.9494	40.3	1.3505	43.4	1.0859	27.2	1.1041	26.4
Correlation With Urbanization	0.2870		−0.0944		0.0310		0.2340		0.2458	
Low Enrollment	0.9808	64.2	0.9885	52.7	0.9095	130.9	0.9840	36.6	0.9789	32.7
Med Enrollment	0.9882	62.1	0.9977	41.9	0.9218	92.9	0.9804	36.5	0.9764	32.5
High Enrollment	1.1148	40.8	1.0183	37.0	1.3255	42.9	1.0747	26.1	1.0920	25.7
Correlation With Enrollment	0.1847		0.1682		0.1634		0.2696		0.3084	
High Degree of Poverty	0.4630	66.1	0.9914	27.3	1.5871	61.0	0.6824	28.3	0.7447	24.9
Med Degree of Poverty	1.0267	46.6	1.0139	44.3	0.9928	82.8	1.0214	26.5	1.0194	27.5
Low Degree of Poverty	1.4571	44.6	0.9668	52.6	0.4349	152.9	1.2535	30.0	1.1971	28.8
Correlation With Degree of Poverty	−0.5020		0.0292		0.4761		−0.4800		−0.3976	
High Proportion Black	0.8441	65.2	1.0124	34.8	1.4965	45.2	0.9139	38.7	0.9541	35.4
Med Proportion Black	1.0161	57.4	0.9923	43.3	0.9607	95.9	1.0062	34.1	1.0031	30.9
Low Proportion Black	1.1076	52.8	1.0108	50.5	0.6218	132.0	1.0674	31.0	1.0367	28.8
Correlation With Black	−0.1574		−0.0296		0.3619		−0.1706		−0.1033	
High Proportion Spanish	1.0412	45.2	1.0293	31.6	1.2359	61.2	1.0363	29.2	1.0500	27.4
Med Proportion Spanish	1.0636	58.1	0.9875	46.2	0.9285	95.9	1.0320	34.7	1.0249	31.6
Low Proportion Spanish	0.7679	67.7	1.0083	45.1	0.9791	104.6	0.8677	36.4	0.8754	31.9
Correlation With Spanish	−0.0433		0.0227		0.1704		−0.0309		0.0020	
High Poverty x Black	0.7312	69.4	0.9807	33.4	1.4997	48.7	0.8348	36.7	0.8806	33.5
Med Poverty x Black	1.0544	54.8	1.0062	44.2	0.9256	97.7	1.0344	33.2	1.0269	30.6
Low Poverty x Black	1.1057	53.7	1.0006	48.8	0.7238	118.8	1.0621	32.0	1.0388	29.3
Correlation With Poverty x Black	−0.2681		−0.0073		0.3209		−0.2682		−0.2113	
High Poverty x Spanish	1.0153	46.7	1.0199	31.1	1.3230	61.0	1.0172	30.5	1.0382	28.4
Med Poverty x Spanish	0.9962	61.0	0.9950	46.0	0.9194	98.7	0.9957	35.6	0.9904	32.2
Low Poverty x Spanish	0.9962	61.0	0.9950	46.0	0.9194	98.7	0.9957	35.6	0.9904	32.2
Correlation With Poverty x Spanish	−0.1015		0.0001		0.1825		−0.1001		−0.0664	

Table VI. Resource and Revenue Scores by Socioeconomic Status, Nationally.

					Measure 4					
Soc Var	0-10%	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Ability to Pay	0.87	0.90	0.93	0.95	1.00	1.01	1.03	1.01	1.11	1.20
Effort	0.81	0.87	0.93	0.94	0.97	1.01	0.99	1.05	1.14	1.30
Urbanization	0.97	0.92	0.94	0.97	0.99	1.00	1.12	1.02	1.03	1.03
ADA/ADM	1.08	1.03	0.98	0.99	0.96	1.00	1.02	1.02	0.95	0.97
Enrollment	1.00	1.00	1.01	1.00	1.00	1.01	0.99	1.00	0.99	1.02
Poverty	1.15	1.07	1.02	1.02	1.02	0.95	1.04	0.97	0.89	0.87
Percent Black	1.01	1.01	1.01	1.02	1.00	1.02	0.99	1.00	0.99	0.95
Percent Spanish	0.93	0.93	0.94	1.02	1.02	1.04	1.11	1.05	0.97	0.99
					Local Rev					
Soc Var	0-10%	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Ability to Pay	0.35	0.55	0.70	0.79	0.92	1.04	1.19	1.24	1.37	1.85
Effort	0.43	0.58	0.74	0.83	0.98	1.12	1.23	1.17	1.40	1.51
Urbanization	0.81	0.67	0.73	0.89	0.98	1.07	1.45	1.03	1.18	1.19
ADA/ADM	1.20	1.12	0.96	0.85	0.81	0.91	1.09	1.11	0.92	1.02
Enrollment	1.04	0.92	0.98	0.95	1.01	1.00	0.99	0.88	0.97	1.26
Poverty	1.60	1.32	1.12	1.04	1.03	0.99	1.11	0.86	0.57	0.35
Percent Black	1.11	1.11	1.11	1.05	1.02	1.00	0.89	1.03	0.87	0.82
Percent Spanish	0.77	0.77	0.78	1.03	1.05	1.16	1.26	1.10	1.06	1.03
					State Rev					
Soc Var	0-10%	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Ability to Pay	1.04	1.09	1.07	1.04	1.03	1.03	0.87	0.94	1.04	0.84
Effort	0.78	0.85	0.89	0.91	0.89	0.92	0.95	1.04	1.16	1.62
Urbanization	1.08	1.09	1.08	0.89	1.00	1.04	0.95	0.97	0.95	0.95
ADA/ADM	1.14	0.98	0.90	1.07	1.02	0.98	1.00	0.99	0.95	0.95
Enrollment	0.97	1.01	0.99	1.04	0.99	1.01	1.00	0.96	0.89	1.14
Poverty	0.94	0.99	0.98	0.99	1.00	0.97	1.16	0.98	0.97	1.01
Percent Black	1.01	1.01	1.01	1.05	0.96	0.97	0.95	1.02	1.05	0.98
Percent Spanish	1.01	1.01	1.01	0.97	0.96	0.96	1.04	0.98	0.92	1.14
					Fed Rev					
Soc Var	0-10%	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Ability to Pay	1.87	1.17	1.05	0.88	0.80	0.97	0.84	0.83	0.96	0.62
Effort	1.25	1.16	1.07	1.05	0.90	0.87	0.87	0.86	1.21	0.76
Urbnization	1.08	1.11	1.05	1.07	0.82	0.82	0.53	0.82	1.35	1.35
ADA/ADM	1.50	1.13	1.00	1.06	1.01	0.83	0.80	0.81	0.88	0.99
Enrollment	0.95	0.87	0.89	0.93	0.91	0.85	0.89	1.07	1.15	1.50
Poverty	0.36	0.51	0.63	0.80	0.96	0.99	1.35	1.23	1.31	1.86
Percent Black	0.62	0.62	0.62	0.75	0.89	1.03	1.22	1.26	1.29	1.70
Percent Spanish	0.98	0.98	0.97	0.80	0.78	0.83	1.10	1.08	1.06	1.41

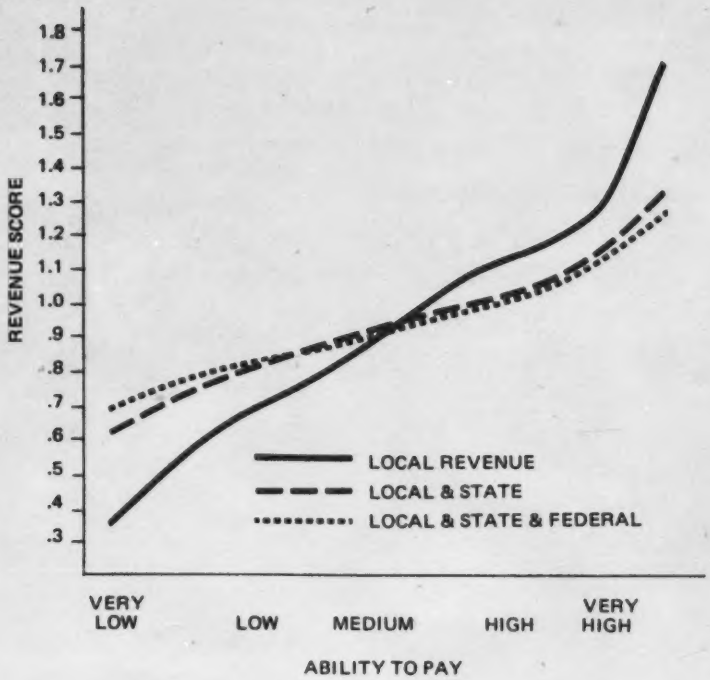


Figure 6. District Revenues Versus Ability to Pay.

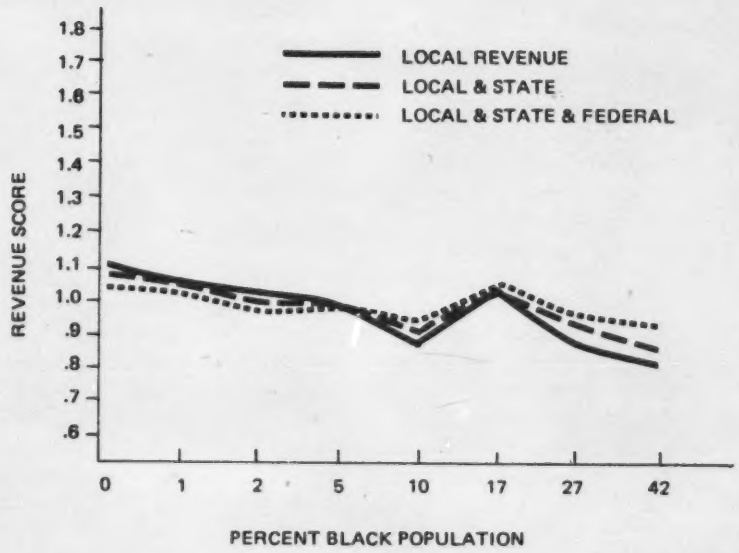


Figure 7. District Revenues Versus Percent Black Population.

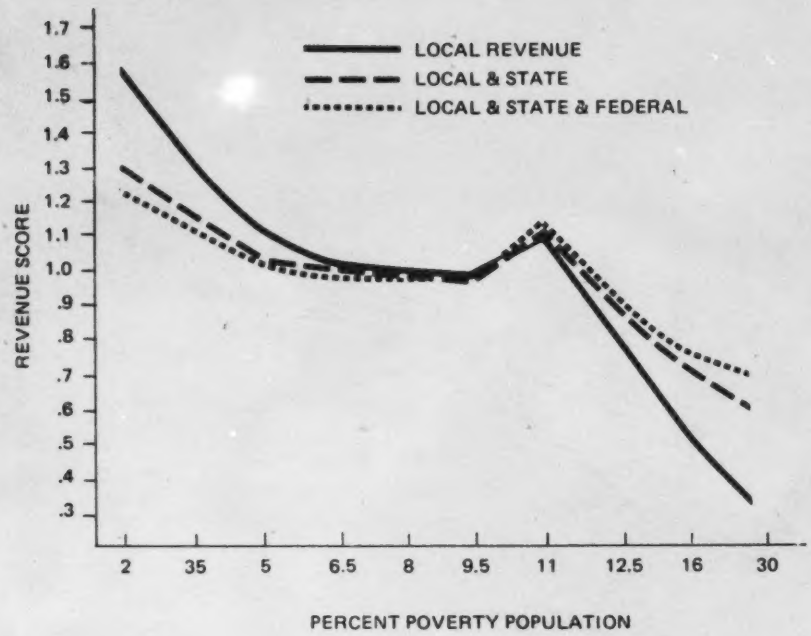


Figure 8. District Revenues Versus Percent Poverty Population.

higher proportions of blacks. This conclusion is also supported by the numbers in Table VI for measure 4. Figure 7 also shows that Federal revenue was almost as significant as State revenue in equalizing revenues across districts of varying proportions of black population.

Table VII gives the pupil-weighted mean and percent variation for each of the socioeconomic variables. In order to facilitate comparison of different states or regions, a standardized score is also provided. It is computed so that the mean for each variable is 50 and the standard deviation is 10. Correlations with enrollment are provided to facilitate an assessment of the effect of controlling for variation in resources due to district size. It may surprise some to see that there is no correlation between poverty and district enrollment. In fact, there is a strong relationship between poverty and size, but this relationship is different in different regions of the Nation. In the South and the Plains States the poor tend to be rural; the correlation between poverty and size in the South Atlantic States, for example, is -.42. The poor in the Northeast, East North Central, and Pacific regions, on the other hand, tend to be located in large cities. The correlation with size is as high as .53 in the Middle Atlantic States. At the national level, however, these trends cancel each other, leaving no net correlation.

One further comment on Table VII is in order. The mean enrollment of 71,702 may seem large. Recall, however, that all statistics in this study are pupil weighted. Thus, 71,702 is not the average district size, but rather the average number of pupils in the same district as a randomly chosen pupil. The object of this study is not the school district but the pupil.

An alternative method for aggregating State results for the national analysis essentially overlooks variations among States and thus focuses on what happens within States. Such an analysis is useful, since there has been very little effort to equalize resources among States, and since the variations in resources and revenue among States are quite large. Table VIIIa lists the relative contributions to total variation[20] of the variation within States and among States. Surprisingly, about half the total variation in resources (M4) is due to variation within States, and half to variation among States. The highly selective nature of Federal revenue contributions within States is evident in the large within-State variance of the Federal programs. The low variance of Federal contributions among States shows clearly the general lack of selectivity in Federal programs among States. The distribution of variation[21] in the socioeconomic variables is shown in Table VIIIb.

Table IX shows results similar to those in Table III, except that State boundaries are recognized. In other

Table VII. Pupil-Weighted Mean and Percent Variation, by Socioeconomic Variable, Nationally.

Socioeconomic variable	Mean	Percent Variation	Standardized Score	Correlation with ADM
Ability to pay	49.796	20.2	50.0	0.20
Enrollment	71,702.057	276.5	50.0	1.00
Proportion poverty population	0.106	80.3	50.0	0.00
Proportion Black population	0.103	136.5	50.0	0.28
Proportion Spanish population	0.048	202.8	50.0	0.26
Poverty & Black population	0.017	221.1	50.0	0.07
Poverty & Spanish population	0.007	411.9	50.0	0.08
Financial effort	15.717	26.5	50.0	0.17
ADA/ADM	0.936	3.8	50.0	-0.58
Degree of urbanization	1.534	69.9	50.0	0.42

Table VIII. Within- Versus Among-State Variation.

a. By Resources and Revenue Source

Resource Measure	Percent of Total Variation Due to Variation: Within States	Among States
M1	35 percent	65 percent
M2	68	32
M3	65	35
M4	47	53
M5	47	53
M6	50	50
Revenue Source		
Local	38	62
State	41	59
Non-Federal	35	65
Federal	79	21
Total	37	63

b. By Socioeconomic Variable

Variable	Within States	Among States
Ability to Pay	68 percent	32 percent
Enrollment	78	22
Poverty	56	44
Black	62	38
Spanish	57	43
Poverty x Black	61	39
Poverty x Spanish	77	23
Effort	42	58
ADA/ADM	73	27
Urbanization	85	15

words, each district is compared only to others in its State, not to the national norm. The Gini index was not computed, due to its computational complexity and to the fact that this within-State analysis had not been planned but was added only after the observations noted above were made.

The main conclusion to be drawn from Table IX is that inequality in resource and revenue distribution is not so great when only within-State variation is considered. The variation[22] in resources drops from 21.2 percent in Table III to 15.2 percent here. Similarly, the disparity ratio between the lowest and highest deciles[23] is reduced from 1.95 to 1.52.

Tables X and XI correspond to Tables IV and V, with only within-State variation considered. Thus, for example, the category "low ability to pay" consists of

Table IX. Within-State Variation in Resources and Revenues, the Nation

Per Pupil Resource Measure	Mean	Percent Variation	Gini	Mean Amount Received by Pupils in Percentile Interval									
				0-10%	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
M1 Current Expenditures . .	1.000	16.8	.1478	0.79	0.85	0.89	0.92	0.96	0.99	1.03	1.08	1.15	1.33
M2 Classroom Teachers . . .	1.000	15.7	.0695	0.84	0.91	0.94	0.96	0.98	1.01	1.03	1.06	1.09	1.17
M3 Instructional Staff Weighted by Degree Level	1.000	15.4	.0734	0.84	0.91	0.93	0.96	0.98	1.01	1.03	1.06	1.09	1.19
M4 Expenses With Salaries Controlled by Ed Level	1.000	15.2	.1059	0.83	0.88	0.91	0.94	0.97	1.00	1.03	1.06	1.12	1.26
M5 Same With Region/Urban Sal Vartn Adjustment .	1.000	15.8	.1202	0.81	0.86	0.90	0.93	0.96	0.99	1.03	1.08	1.15	1.30
M6 Composite Measure . . .	1.000	14.0	.0933	0.84	0.89	0.92	0.95	0.97	1.00	1.03	1.06	1.11	1.24
Local	1.000	41.4	.3122	0.46	0.62	0.72	0.81	0.91	1.01	1.09	1.20	1.39	1.78
State	1.000	24.8	.2282	0.64	0.79	0.87	0.92	0.96	1.01	1.06	1.13	1.22	1.39
Federal	1.000	89.0	.3988	0.26	0.38	0.49	0.61	0.72	0.88	1.11	1.37	1.76	2.42
Total non Federal	1.000	20.7	.1864	0.75	0.83	0.88	0.92	0.95	0.99	1.03	1.09	1.17	1.39
Total	1.000	19.5	.1673	0.77	0.84	0.88	0.92	0.96	1.00	1.04	1.08	1.16	1.35

the 20 percent of pupils in districts with the lowest ability to pay *in their State*. Thus, a district in Connecticut could be included even though it had a higher score than the national average, whereas an Alabama district that is poor by national standards could be in the high ability-to-pay category.

The difference between the two analytical perspectives—one in which districts are compared to all others in the Nation, the other in which districts are compared only to others in their States—can be helpful in guiding policy considerations. For instance, according to Table IV the districts with high proportions of blacks receive slightly lower levels of resources than the average; but according to Table X they receive slightly more. Scrutiny of the detailed data traces the difference to the fact that many of these districts are located in southern States, which generally provide lower levels of resources to *all* their pupils than do other States. Within the southern States, however, such districts actually receive more resources than average for the State. Thus, it appears that the only way to achieve further equalization for black pupils is through some form of interstate equalization. Whether or not that is feasible is, of course, another matter.

The results on poverty are somewhat different. First, the variation in resources and revenues is much greater among districts with varying levels of poverty than among districts of different racial compositions. Further, more of the variation is attributable to resource distribution within the States than was the case with blacks. High-poverty districts do not fare quite so badly compared to others in their State as compared to all others in the Nation, but still, they have generally not been given equal resources even for their State. There is one exception. As Table XII shows, the very poorest districts (highest decile of poverty) in fact received more (102%) than their States' average resources per pupil. Districts with a moderate amount of poverty for their State, however, received less than average. The high levels of resources in the districts with most poverty can readily be traced to the very significant effect of Federal and State funds in attempting to counter the shortfalls in local revenues.

Figure 9 shows the distribution of revenues by degree of poverty relative to a district's state. By comparing this figure with Figure 8, and Table XII with Table VI, it is clear that, as far as poverty populations are concerned, the proper emphasis for further equalization efforts is on interstate equalization. This, of course, refers to equalization across school districts. It says nothing about the distribution of resources to various groups within districts. It would be interesting to analyze this within-district distribution, but neither Census/ELSEGIS nor other readily available sources contain the data required for that analysis.

Table XIII corresponds to Table VII, except that the variation was recomputed after each State was "equalized" to the national norm. This procedure was different from that used in the construction of Table VIIIb, and the results should not be compared. These two tables have different purposes which required different methods. Compared to Table VII, most of the variations are smaller in Table XIII. One exception[24] is proportion of black population. This probably reflects

Table X. Within-State Variation in Resources by Socioeconomic Status, Nationally.

Socio-Economic Characteristic	Resource Variable M1 Current Expenses Mean	% +/−	M2 Classroom Teachers Mean	% +/−	M3 Education WGTD Staff Mean	% +/−	M4 $ With Salary Controlled by Ed Mean	% +/−	M5 $ With Salary Adj for URB/REG Mean	% +/−	M6 Composite Measure Mean	% +/−
Low Ability to Pay	0.9415	24.9	0.9811	27.2	0.9722	26.0	0.9667	24.0	0.9566	20.3	0.9650	21.6
Med Ability to Pay	0.9757	25.8	0.9917	12.8	0.9902	13.3	0.9818	18.9	0.9777	21.5	0.9640	16.2
High Ability to Pay	1.1295	30.9	1.0449	14.0	1.0581	14.9	1.0874	22.1	1.1083	26.4	1.0828	19.3
Correlation With Ability to Pay	0.4329		0.1596		0.2171		0.3111		0.3932		0.3318	
Low Financial Effort	0.9427	28.4	0.9750	14.2	0.9713	14.3	0.9504	20.2	0.9340	23.7	0.9554	17.8
Med Financial Effort	0.9802	25.8	0.9927	12.4	0.9917	13.1	0.9847	18.6	0.9827	21.1	0.9668	16.0
High Financial Effort	1.1147	29.4	1.0480	26.3	1.0546	25.1	1.0950	25.0	1.1159	24.4	1.0839	22.3
Correlation With Financial Effort	0.3350		0.1590		0.1800		0.3174		0.3726		0.3046	
Low ADA/ADM	0.9798	23.0	0.9885	15.1	0.9876	15.7	0.9891	18.9	0.9872	19.4	0.9868	16.6
Med ADA/ADM	1.0049	28.7	1.0036	18.0	1.0036	17.9	1.0025	21.7	1.0028	23.9	1.0035	19.1
High ADA/ADM	1.0037	29.6	1.0018	15.2	1.0025	15.6	1.0028	21.6	1.0023	24.6	1.0026	18.6
Correlation With ADA/ADM	0.1074		0.0017		0.0084		0.0720		0.0846		0.0656	
Low Urbanization	0.9668	26.5	0.9970	27.8	0.9917	26.6	0.9852	24.9	0.9956	22.4	0.9982	22.6
Med Urbanization	1.0083	29.3	1.0027	13.0	1.0044	13.9	1.0027	20.7	1.0015	24.4	1.0037	17.9
High Urbanization	1.0063	24.3	0.9961	12.5	0.9961	13.0	1.0061	18.3	0.9979	20.5	1.0003	15.9
Correlation With Urbanization	0.1753		0.0402		0.0595		0.1184		0.0618		0.0973	
Low Enrollment	0.9989	28.9	0.9920	28.1	0.9924	26.9	0.9966	26.2	1.0023	24.5	0.9957	23.7
Med Enrollment	0.9999	28.8	1.0060	13.0	1.0060	13.9	1.0017	20.2	0.9989	23.8	1.0030	17.4
High Enrollment	0.9993	24.0	0.9911	11.9	0.9906	12.5	0.9979	18.2	0.9989	20.1	0.9950	15.8
Correlation With Enrollment	−0.0557		−0.0600		−0.0661		−0.0634		−0.0554		−0.0745	
High Degree of Poverty	0.9785	23.1	1.0024	26.2	0.9982	25.0	0.9990	22.4	0.9964	19.0	0.9970	20.7
Med Degree of Poverty	0.9870	27.9	0.9924	13.9	0.9913	14.6	0.9881	20.5	0.9860	23.3	0.9887	17.6
Low Degree of Poverty	1.0585	30.6	1.0217	12.6	1.0290	13.5	1.0363	21.4	1.0436	25.0	1.0367	18.4
Correlation With Degree of Poverty	−0.1134		−0.0103		−0.0372		−0.0337		−0.0600		−0.0557	
High Proportion Black	1.0093	26.7	0.9964	19.3	0.9985	19.1	1.0118	21.9	1.0136	21.8	1.0059	19.6
Med Proportion Black	1.0025	28.3	1.0036	16.9	1.0038	17.0	1.0006	21.2	1.0003	23.7	1.0022	18.5
Low Proportion Black	0.9811	27.9	0.9940	14.2	0.9910	14.7	0.9858	20.2	0.9834	23.2	0.9872	17.4
Correlation With Black	0.1031		−0.0005		0.0091		0.0943		0.1057		0.0663	
High Proportion Spanish	1.0001	22.6	1.0132	25.4	1.0096	24.3	1.0070	22.1	1.0020	19.3	1.0077	20.4
Med Proportion Spanish	1.0068	29.9	1.0006	13.6	1.0020	14.5	1.0041	21.5	1.0047	25.0	1.0033	18.5
Low Proportion Spanish	0.9774	26.2	0.9862	14.6	0.9855	14.8	0.9803	19.0	0.9820	21.3	0.9620	16.5
Correlation With Spanish	0.0351		0.0471		0.0366		0.0388		0.0216		0.0375	
High Poverty x Black	0.9888	25.3	0.9975	26.2	0.9981	25.1	1.0021	23.9	0.9985	20.8	0.9982	21.9
Med Poverty x Black	1.0031	28.3	1.0012	13.6	1.0014	14.2	1.0000	20.3	1.0005	23.6	1.0010	17.5
Low Poverty x Black	0.9999	29.1	0.9999	13.9	0.9988	14.7	0.9973	20.8	0.9980	24.5	0.9986	18.0
Correlation With Poverty x Black	0.0658		0.0081		0.0119		0.0821		0.0782		0.0538	
High Poverty x Spanish	0.9692	22.8	1.0093	25.9	1.0039	24.9	0.9875	22.6	0.9774	19.2	0.9917	21.0
Med Poverty x Spanish	1.0039	28.7	0.9981	13.8	0.9990	14.4	1.0011	20.8	1.0025	24.0	1.0005	17.9
Low Poverty x Spanish	1.0171	29.4	0.9974	13.5	1.0002	14.2	1.0086	21.0	1.0130	24.4	1.0064	17.9
Correlation With Poverty x Spanish	0.0146		0.0445		0.0299		0.0447		0.0212		0.0338	

Table XI. Within-State Variation in Revenues by Socioeconomic Status, Nationally

Socio-Economic Characteristic	Revenue Variable: Local Mean	Local +/−	State Mean	State % +/−	Federal Mean	Federal % +/−	Non Federal Mean	Non Federal % +/−	Total Mean	Total % +/−
Low Ability to Pay	0.6708	63.6	1.1627	43.8	1.3271	97.8	0.8750	33.9	0.9062	28.5
Med. Ability to Pay	0.9704	50.1	0.9976	40.0	0.9805	77.2	0.9817	31.5	0.9816	29.4
High Ability to Pay	1.4181	51.1	0.8444	45.9	0.7316	95.6	1.1799	35.4	1.1490	33.3
Correlation With Ability to Pay	0.7032		−0.4327		−0.2014		0.5951		0.5110	
Low Financial Effort	0.8468	62.3	0.9035	39.9	1.0228	114.2	0.8704	36.6	0.8809	32.9
Med Financial Effort	0.9805	52.0	0.9921	40.3	0.9608	74.9	0.9853	30.4	0.9836	27.6
High Financial Effort	1.2117	62.5	1.1202	49.4	1.0953	97.4	1.1737	36.1	1.1683	32.5
Correlation With Financial Effort	0.3955		0.3224		0.0557		0.6616		0.6711	
Low ADA/ADM	1.0373	47.3	0.9674	37.3	1.2904	67.0	1.0083	30.4	1.0277	28.0
Med ADA/ADM	1.0013	59.8	0.9974	44.1	0.9381	95.1	0.9997	35.2	0.9954	32.2
High ADA/ADM	0.9588	64.5	1.0402	45.7	0.8957	101.6	0.9926	36.8	0.9859	32.5
Correlation With ADA/ADM	−0.0682		0.0675		−0.2434		−0.0180		−0.0673	
Low Urbanization	0.8421	67.7	1.1060	47.4	1.0519	109.7	0.9517	35.4	0.9586	31.0
Med Urbanization	1.0262	60.3	0.9833	42.6	0.8997	97.0	1.0084	36.3	1.0009	33.0
High Urbanization	1.0792	40.9	0.9440	36.9	1.2495	48.1	1.0231	27.6	1.0387	26.6
Correlation With Urbanization	0.3152		−0.2256		0.0975		0.1735		0.1603	
Low Enrollment	0.9012	71.4	1.0743	49.8	1.0169	116.6	0.9731	36.0	0.9761	33.5
Med Enrollment	0.9993	60.4	0.9963	42.0	0.9139	94.0	0.9981	35.9	0.9923	32.5
High Enrollment	1.1009	38.1	0.9366	36.8	1.2419	49.1	1.0327	26.5	1.0471	25.7
Correlation With Enrollment	0.1928		−0.1088		0.2392		0.1168		0.1442	
High Degree of Poverty	0.8562	58.6	1.0681	37.0	1.5489	70.9	0.9442	32.8	0.9858	28.8
Med Degree of Poverty	0.9791	56.5	0.9941	44.3	0.9510	82.0	0.9853	33.5	0.9830	31.0
Low Degree of Poverty	1.2064	56.8	0.9496	46.1	0.5984	126.5	1.0998	36.5	1.0653	33.8
Correlation With Degree of Poverty	−0.3152		0.2170		0.4574		−0.2361		−0.0954	
High Proportion Black	1.0652	49.5	0.9698	37.4	1.3997	55.9	1.0256	31.3	1.0513	28.7
Med Proportion Black	0.9931	59.7	0.9960	43.0	0.9370	96.8	0.9943	35.4	0.9903	32.1
Low Proportion Black	0.9555	63.1	1.0423	48.4	0.7896	111.6	0.9916	35.5	0.9777	31.9
Correlation With Black	0.0733		−0.0334		0.3983		0.0513		0.1434	
High Proportion Spanish	1.0273	49.4	0.9729	35.9	1.3320	61.6	1.0047	31.2	1.0272	28.6
Med Proportion Spanish	1.0275	59.6	0.9877	43.0	0.9258	90.9	1.0110	35.8	1.0051	32.6
Low Proportion Spanish	0.8901	62.0	1.0641	48.8	0.8910	119.7	0.9623	33.6	0.9574	30.2
Correlation With Spanish	0.0917		−0.0737		0.2283		0.0377		0.0951	
High Poverty x Black	1.0136	52.4	1.0015	37.2	1.4039	59.3	1.0086	31.7	1.0358	29.0
Med Poverty x Black	0.9982	59.3	0.9942	43.9	0.9224	96.3	0.9965	35.1	0.9914	32.0
Low Poverty x Black	0.9918	61.4	1.0157	47.0	0.8294	107.8	1.0017	35.8	0.9899	32.0
Correlation With Poverty x Black	−0.0100		0.0225		0.4078		−0.0018		0.1010	
High Poverty x Spanish	0.9768	53.7	0.9913	35.9	1.2292	71.9	0.9828	32.7	0.9998	30.0
Med Poverty x Spanish	1.0068	58.8	0.9994	44.6	0.9576	91.4	1.0037	34.8	1.0006	31.6
Low Poverty x Spanish	1.0026	61.1	1.0105	46.0	0.8985	107.0	1.0059	35.7	0.9985	32.3
Correlation With Poverty x Spanish	−0.0090		−0.0009		0.3167		−0.0277		0.0595	

Table XII. Within-State Resource and Revenue Scores by Socioeconomic Status, Nationally.

					Measure 4					
Soc Var	0-10%	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Ability to Pay	0.97	0.96	0.97	0.97	1.00	0.99	0.97	0.99	1.04	1.13
Effort	0.95	0.95	0.96	0.96	0.98	1.00	1.01	1.01	1.07	1.12
Urbanization	0.99	0.98	0.98	0.98	1.02	1.02	1.01	1.01	1.00	1.01
ADA/ADM	1.00	0.98	1.00	1.01	1.01	1.00	1.01	0.99	1.00	1.00
Enrollment	0.99	1.00	1.00	1.00	1.00	1.00	1.01	1.00	1.01	0.98
Poverty	1.04	1.03	1.01	1.00	0.98	0.99	0.98	0.97	0.98	1.02
Percent Black	0.98	0.99	0.99	0.99	1.00	1.01	1.00	1.01	1.01	1.01
Percent Spanish	0.99	0.97	0.99	0.99	1.02	1.03	1.02	0.99	1.00	1.02
					Local Rev					
Soc Var	0-10%	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Ability to Pay	0.51	0.73	0.80	0.87	0.96	1.00	1.07	1.12	1.28	1.55
Effort	0.80	0.89	0.93	0.96	0.92	0.97	1.04	1.06	1.09	1.33
Urbanization	0.84	0.84	0.86	0.93	1.06	1.09	1.13	1.08	1.08	1.08
ADA/ADM	1.06	1.02	1.02	1.04	1.01	0.98	1.00	0.96	0.96	0.95
Enrollment	0.88	0.92	0.92	0.97	1.01	1.02	1.04	1.04	1.09	1.11
Poverty	1.23	1.18	1.05	1.04	0.94	0.92	0.95	0.97	0.90	0.81
Percent Plack	0.94	0.97	0.98	0.99	0.99	1.03	0.99	1.00	1.08	1.05
Percent Spanish	0.90	0.88	0.92	0.97	1.05	1.10	1.05	1.06	1.06	1.00
					State Rev					
Soc Var	0-10%	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Ability to Pay	1.21	1.11	1.09	1.04	1.01	0.97	0.95	0.93	0.86	0.83
Effort	0.88	0.92	0.94	0.95	0.99	1.01	1.02	1.04	1.08	1.16
Urbanization	1.13	1.08	1.06	1.02	0.98	0.97	0.93	0.94	0.94	0.95
ADA/ADM	0.97	0.96	0.98	0.97	0.99	1.00	1.00	1.04	1.03	1.05
Enrollment	1.11	1.04	1.03	1.02	1.01	1.01	0.97	0.95	0.93	0.94
Poverty	0.95	0.95	0.99	0.98	0.99	1.00	1.00	1.00	1.04	1.10
Percent Black	1.05	1.04	1.03	1.02	0.99	0.98	0.99	0.97	0.96	0.98
Percent Spanish	1.07	1.06	1.04	1.01	0.99	0.97	0.98	0.94	0.96	0.99
					Fed Rev					
Soc Var	0-10%	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Ability to Pay	1.19	1.17	0.93	0.92	1.04	1.06	0.99	0.94	0.81	0.65
Effort	1.08	0.96	0.94	1.00	0.91	0.92	0.97	1.02	1.00	1.19
Urbanization	1.04	1.06	0.96	0.92	0.84	0.82	0.83	1.03	1.23	1.27
ADA/ADM	1.32	1.26	1.11	1.01	0.92	0.89	0.82	0.87	0.88	0.91
Enrollment	1.08	0.95	0.93	0.90	0.85	0.90	0.94	0.97	1.19	1.29
Poverty	0.52	0.58	0.73	0.79	0.87	0.99	1.09	1.25	1.43	1.67
Percent Black	0.80	0.78	0.79	0.78	0.81	0.96	1.03	1.26	1.27	1.53
Percent Spanish	0.89	0.89	0.90	0.87	0.86	0.86	0.94	1.14	1.27	1.39

the *de facto* interdistrict segregation of blacks within States. For example, in the Northeast and North Central States, blacks are concentrated in large cities. The other variable with increased variation is degree of urbanization. This increase may be due to the large variation in urbanization in those States whose average urbanization level is low.

Since the basic tabulations are bulky, it would be tedious to make State-by-State comparisons. For this reason several summary tables are provided for some of the most significant State-by-State and regional results.

Table XIV provides a very compact reference table for inspecting some of the key differences among States. It lists the mean and variation of the scores for each of the six resource and five revenue variables. From the point of view of an inequality analysis, the variations are more significant; the means are significant only if interstate equalization were to be attempted. Table XIV also gives, in the "% TOT" column, the relative contributions of local, State, and Federal revenues to total revenue. This information is shown for each State, region, and the Nation.

The most notable conclusions to be drawn from Table XIV concern the variation in inequality of resources among the States. For example, Vermont and

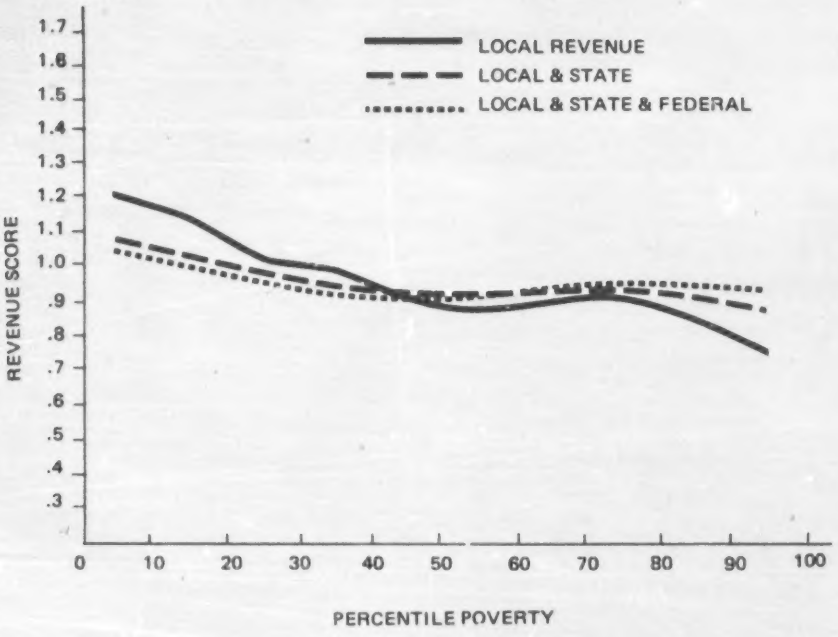


Figure 9. District Revenues Versus Poverty Standing Relative to State.

California stand out as having the greatest disparities (using measure 4); and, excluding the District of Columbia and Hawaii (which are single districts), Louisiana, Nevada, and West Virginia appear to have the least inequality of resource distribution. Regionally, the Northeast and West Coast have more disparity than the rest of the Nation. Caution must be exercised in interpreting regional results, however, since much of the regional variation is due to differences between States rather than within States. For example, while the Middle Atlantic region shows a 20 percent variation in measure 4, none of the three States in that region has a variation greater than 14 percent.

Tables XV, XVI, XVII, and XVIII show the correlations of measure 4 and revenues with selected socioeconomic variables. Table XIX summarizes the scores of each State and region on these socioeconomic variables. (The data in the column headed "wealth" reflect the ability-to-pay variable.) Table XIX in conjunction with Table XIV is very helpful in comparing the performance of various States. Several States stand out. For example, Alabama, despite receiving

Table XIII. Within-State Pupil-Weighted Mean and Percent Variation, by Socioeconomic Variable, Nationally.

Socioeconomic variable	Mean	Percent Variation	Standardized Score	Correlation with ADM
Ability to pay	49.796	15.8	50.0	0.20
Enrollment	71,702.057	149.9	50.0	1.00
Proportion poverty population	0.106	55.5	50.0	0.00
Proportion Black population	0.103	141.7	50.0	0.28
Proportion Spanish population	0.048	115.5	50.0	0.26
Poverty x Black population	0.017	168.9	50.0	0.07
Poverty x Spanish population	0.007	155.9	50.0	0.08
Financial effort	15.717	16.8	50.0	0.17
ADA/ADM	0.936	3.3	50.0	-0.58
Degree of urbanization	1.534	73.3	50.0	0.42

Table XIV. Mean Resources and Revenues by State, Region, and Nation

State	M1 AV	% VAR	M2 AV	% VAR	M3 AV	% VAR	M4 AV	% VAR	M5 AV	% VAR	M6 AV	% VAR	LOC AV	% VAR	% TOT	ST AV	% VAR	% TOT	FED AV	% VAR	% TOT	NF AV	% VAR	TOT AV	% VAR
ALA	0.57	10	0.87	8	0.85	8	0.70	9	0.68	11	0.74	8	0.23	62	23	0.84	23	59	1.43	38	18	0.48	18	0.55	16
ALAS	1.46	7	1.10	12	1.10	13	131	8	1.42	8	1.26	8	0.79	40	30	2.25	14	62	1.59	28	8	1.39	16	1.41	16
ARIZ	0.96	15	0.98	14	1.01	14	1.00	13	1.00	15	0.99	13	0.67	47	41	1.16	25	50	1.20	123	9	0.88	23	0.90	22
ARK	0.65	15	0.84	13	0.83	13	0.77	14	0.75	16	0.78	13	0.46	35	40	0.66	18	41	1.77	71	19	0.55	15	0.63	17
CAL	1.06	22	0.91	26	0.91	34	0.95	27	0.95	21	0.95	26	1.13	40	59	0.95	25	35	0.96	80	6	1.06	21	1.05	19
COLO	0.94	14	1.01	7	1.03	7	0.99	9	0.99	13	1.00	9	1.18	29	66	0.66	22	26	1.10	74	8	0.96	16	0.97	15
CONN	1.14	21	1.15	13	1.18	13	1.12	17	1.14	21	1.15	15	1.43	47	73	0.64	40	23	0.53	125	3	1.10	33	1.06	32
DEL	1.03	14	1.03	7	1.03	8	0.98	9	1.05	14	1.02	9	0.49	39	27	1.69	9	66	0.97	102	7	0.99	15	0.99	13
D.C.	1.28	0	1.14	0	1.15	0	1.30	0	1.32	0	1.24	0	2.23	0	87	0.00	0	0	2.65	0	13	1.30	0	1.40	0
FLA	0.91	12	1.00	11	1.01	10	0.93	12	0.95	12	0.96	11	0.61	35	35	1.37	9	56	1.35	48	10	0.93	12	0.96	12
GA	0.74	14	0.93	10	0.92	9	0.86	11	0.78	12	0.86	10	0.44	57	36	0.92	14	52	1.20	45	12	0.64	18	0.68	15
HA	1.04	0	1.04	0	1.06	0	1.12	0	0.94	0	1.05	0	0.02	0	1	1.85	0	85	1.62	0	13	0.78	0	0.84	0
IDA	0.76	11	0.89	9	0.87	9	0.87	10	0.80	11	0.84	9	0.57	28	45	0.82	17	45	1.03	78	10	0.68	12	0.70	11
ILL	1.08	15	1.05	12	1.05	13	1.06	13	1.04	15	1.06	12	1.57	51	68	0.90	33	28	0.82	84	4	1.29	31	1.26	29
IND.	0.92	14	0.94	10	0.94	10	0.88	12	0.89	13	0.91	11	0.85	37	58	0.75	20	37	0.57	62	5	0.81	19	0.79	18
IOWA	1.13	17	1.05	12	1.04	12	1.09	18	1.16	16	1.09	13	1.41	17	70	0.73	13	26	0.68	33	4	1.13	14	1.10	13
KAN	1.02	18	1.14	17	1.15	16	1.08	17	1.05	19	1.10	17	1.15	35	63	0.78	16	30	1.03	75	7	1.00	25	1.00	22
KEN	0.79	15	0.97	7	0.98	7	0.89	10	0.91	14	0.91	9	0.43	56	32	1.03	12	54	1.56	71	15	0.68	15	0.74	13
LA	0.78	9	1.00	6	0.99	6	0.91	6	0.94	9	0.93	6	0.49	35	33	1.18	13	57	1.19	53	10	0.77	10	0.80	10
ME	0.85	14	1.02	12	1.01	12	0.91	13	0.88	14	0.94	11	0.84	70	54	0.88	52	40	0.77	100	6	0.86	37	0.85	34
MD	1.06	11	1.07	5	1.06	5	1.04	7	1.09	10	1.06	6	1.21	25	58	1.00	21	34	1.16	37	7	1.13	13	1.13	12
MASS	1.12	17	1.08	23	1.09	22	1.09	19	1.11	17	1.10	18	1.68	31	76	0.62	33	20	0.68	91	4	1.23	25	1.19	24
MICH	1.17	19	0.92	10	0.95	11	1.04	16	1.14	18	1.03	14	1.17	42	54	1.28	16	42	0.66	83	4	1.22	21	1.18	21
MINN	1.14	12	1.07	9	1.06	9	1.05	9	1.16	12	1.09	8	1.05	29	51	1.28	25	44	0.85	98	5	1.15	13	1.13	12
MISS	0.65	15	0.89	9	0.88	10	0.80	12	0.76	14	0.80	10	0.30	47	27	0.86	10	54	1.76	62	20	0.53	14	0.62	15
MO	0.92	24	1.03	19	1.05	20	1.02	21	0.94	23	1.00	20	0.97	44	59	0.81	22	35	0.85	114	7	0.90	27	0.90	25
MONT	0.92	10	0.86	33	0.83	31	0.85	20	0.95	10	0.87	18	1.03	30	62	0.84	21	28	1.30	117	10	0.87	22	0.90	21
NEB	0.90	12	1.02	10	1.04	10	0.97	11	0.92	13	0.98	10	1.10	24	74	0.42	13	20	0.77	100	7	0.62	18	0.81	16
NEV	0.98	8	0.96	8	0.96	7	0.95	6	1.04	8	0.98	7	1.01	26	55	0.93	20	36	1.32	38	9	0.98	12	1.00	10
N.H.	0.91	13	1.09	11	1.09	11	0.98	11	0.93	14	1.01	11	1.46	43	87	0.19	70	8	0.67	119	5	0.93	40	0.91	36
N.J.	1.18	17	1.09	10	1.08	11	1.09	14	1.08	17	1.10	13	1.56	33	75	0.61	38	21	0.67	116	4	1.16	23	1.13	21
N.M.	0.64	14	0.98	6	0.99	6	0.95	10	0.89	15	0.94	9	0.34	48	21	1.41	9	62	2.20	76	17	0.78	15	0.88	17
N.Y.	1.50	20	1.11	9	1.14	9	1.38	14	1.42	18	1.30	11	1.40	41	50	1.85	25	46	0.92	83	4	1.59	15	1.54	14
N.C.	0.78	11	0.95	6	0.93	7	0.87	8	0.85	9	0.88	7	0.35	45	26	1.20	8	62	1.36	51	13	0.70	13	0.75	10
N.D.	0.81	12	1.00	9	0.94	9	0.89	11	0.85	11	0.91	9	0.99	27	63	0.60	20	27	1.27	88	10	0.83	19	0.86	14

Table XIV. Mean Resources and Revenues by State, Region, and Nation

State	M1 AV	% VAR	M2 AV	% VAR	M3 AV	% VAR	M4 AV	% VAR	M5 AV	% VAR	M6 AV	% VAR	LOC AV	% VAR	% TOT	ST AV	% VAR	% TOT	FED AV	% VAR	% TOT	NF AV	% VAR	TOT AV	% VAR
OHIO	0.99	10	0.95	9	0.94	11	1.02	14	0.95	16	0.97	12	1.22	36	69	0.66	26	26	0.72	153	5	0.99	22	0.97	25
OKLA	0.72	17	0.97	17	0.99	17	0.86	17	0.84	16	0.89	16	0.60	52	51	0.65	33	39	0.97	108	10	0.62	31	0.64	33
ORE	1.14	10	1.03	7	1.05	7	1.09	8	1.05	12	1.07	8	1.47	18	74	0.60	30	21	0.76	66	5	1.11	14	1.08	13
PENN	1.01	12	1.00	10	0.99	10	1.00	12	0.96	12	0.99	10	0.98	36	51	1.23	27	45	0.71	97	5	1.09	15	1.06	17
R.I.	1.13	19	1.12	11	1.13	11	1.14	16	1.12	20	1.13	14	1.09	22	62	0.77	25	31	0.96	97	7	0.96	15	0.96	17
S.C.	0.76	9	0.96	8	0.96	8	0.89	8	0.82	9	0.89	7	0.34	37	28	0.96	40	56	1.54	49	16	0.60	33	0.66	26
S.D.	0.66	13	1.06	18	1.03	16	0.98	17	0.88	13	0.97	14	1.12	22	75	0.28	19	13	1.35	136	11	0.77	18	0.81	13
TENN	0.68	15	0.91	8	0.87	9	0.77	12	0.79	13	0.81	10	0.45	47	38	0.78	9	47	1.34	50	14	0.59	19	0.64	15
TEX	0.75	20	1.06	12	1.04	11	0.89	15	0.89	18	0.94	14	0.63	55	47	0.80	20	43	1.12	99	11	0.70	26	0.73	19
UTAH	0.62	10	0.86	7	0.85	6	0.85	7	0.87	10	0.85	7	0.60	36	39	1.14	19	53	0.90	47	7	0.82	10	0.83	10
VT	1.20	34	1.30	34	1.30	34	1.24	33	1.22	34	1.26	33	1.26	62	62	0.99	59	34	0.62	95	4	1.15	56	1.11	54
VA	0.65	21	1.02	11	1.02	12	0.90	15	0.91	19	0.95	14	0.85	39	54	0.74	18	33	1.52	48	12	0.81	20	0.85	20
WASH	1.13	15	0.94	8	0.96	8	1.03	11	1.04	14	1.01	10	0.87	44	42	1.46	21	51	1.09	185	7	1.11	21	1.11	21
W. VA	0.61	10	0.96	6	0.95	6	0.88	6	0.89	6	0.90	5	0.52	35	35	1.07	9	51	1.53	70	13	0.75	12	0.80	12
WIS	1.06	15	1.06	10	1.04	11	1.01	11	1.01	15	1.04	11	1.43	30	69	0.80	44	27	0.57	58	3	1.17	16	1.13	16
WYO	1.04	15	1.07	12	1.06	12	1.03	13	1.10	14	1.06	12	0.98	46	57	0.92	33	38	0.73	125	5	0.96	19	0.94	19
U.S.	1.00	28	1.00	17	1.00	17	1.00	21	1.00	23	1.00	19	1.00	58	54	1.00	43	39	1.00	90	7	1.00	35	1.00	31
N.E.	1.09	21	1.10	20	1.12	20	1.08	20	1.09	21	1.10	18	1.45	44	73	0.65	48	23	0.66	104	4	1.12	32	1.09	31
M.A.	1.28	25	1.07	10	1.08	12	1.20	20	1.20	25	1.16	16	1.30	42	54	1.40	44	42	0.80	94	4	1.34	25	1.30	24
S.A.	0.66	19	0.99	10	0.99	10	0.92	13	0.91	17	0.94	13	0.66	66	42	1.05	31	47	1.38	52	11	0.82	27	0.86	25
ESC	0.67	19	0.91	9	0.89	10	0.78	14	0.78	17	0.81	12	0.36	60	31	0.87	18	53	1.50	58	16	0.57	21	0.64	18
WSC	0.74	18	1.02	13	1.00	13	0.88	15	0.88	17	0.92	14	0.59	53	44	0.84	29	45	1.16	90	11	0.69	24	0.72	21
ENC	1.05	19	0.98	12	0.98	13	1.01	15	1.02	18	1.01	13	1.27	47	64	0.89	37	32	0.69	108	4	1.11	29	1.08	28
WNC	1.02	20	1.06	15	1.06	15	1.04	17	1.05	20	1.05	15	1.12	33	61	0.85	41	33	0.87	100	6	1.01	23	1.00	21
MTN	0.90	15	0.96	14	0.96	14	0.94	13	0.95	15	0.94	13	0.80	52	49	0.97	35	42	1.24	96	10	0.87	20	0.90	19
PAC	1.08	20	0.93	31	0.93	29	0.98	24	0.97	20	0.97	23	1.09	44	56	1.03	35	38	0.99	102	6	1.06	21	1.06	20

Table XV. Correlation of Resources Per Pupil with Socioeconomic Variables, by State, Region, and Nation

State	Amount	% +/-	Correlation With						
			Wealth	Effort	Urbanization	Enrollment	% Black	% Span.	Poverty
Alabama	0.697	8.7	0.023	0.394	−0.063	−0.329	−0.107	0.062	0.103
Alaska	1.308	8.1	−0.075	0.675	0.124	0.089	0.454	0.364	0.039
Arizona	0.998	13.2	0.096	0.256	0.198	0.084	0.074	−0.285	0.078
Arkansas	0.774	13.6	0.507	0.399	0.476	0.530	0.150	0.141	−0.212
California	0.948	26.6	0.114	0.246	−0.147	−0.258	0.075	−0.062	0.080
Colorado	0.995	9.4	0.525	0.626	0.117	0.294	0.324	−0.177	−0.105
Connecticut	1.125	16.8	0.481	0.204	0.241	0.408	0.508	0.302	0.239
Delaware	0.983	9.5	0.495	0.235	0.564	0.506	0.436	0.580	0.214
Dist. of Col.	1.297	0.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Florida	0.934	11.7	0.140	0.562	−0.414	−0.648	−0.153	−0.462	0.102
Georgia	0.863	10.8	0.579	0.302	0.586	0.564	0.142	0.488	−0.311
Hawaii	1.122	0.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Idaho	0.869	9.6	0.189	0.426	0.178	0.139	0.277	−0.011	0.080
Illinois	1.064	12.8	0.453	0.235	0.023	−0.152	−0.125	−0.084	−0.273
Indiana	0.878	12.1	0.314	0.284	0.308	0.077	0.373	0.484	0.142
Iowa	1.091	18.1	0.271	0.524	0.299	0.280	0.139	0.225	−0.205
Kansas	1.078	16.6	−0.016	0.758	−0.429	−0.285	−0.346	−0.173	0.390
Kentucky	0.886	10.3	0.285	0.453	0.497	0.405	0.513	0.003	−0.106
Louisiana	0.912	6.4	−0.075	0.641	−0.085	−0.081	−0.036	−0.218	0.107
Maine	0.910	12.9	0.313	0.279	0.024	0.228	−0.201	−0.071	−0.025
Maryland	1.028	6.7	0.925	−0.438	0.066	0.171	−0.544	0-823	−0.730
Massachusetts	1.092	19.2	0.323	0.446	0.076	0.268	0.265	0.183	0.054
Michigan	1.035	15.5	0.525	0.555	0.317	−0.278	−0.093	0.075	−0.303
Minnnesota	1.052	9.1	0.299	0.086	0.255	0.253	0.317	0.121	0.022
Mississippi	0.796	12.0	0.144	0.492	0.285	0.139	0.179	0.192	0.110
Missouri	1.017	21.2	0.616	0.329	0.205	0.127	0.345	0.188	0.000
Montana	0.845	19.7	0.334	0.309	0.031	−0.176	0.166	0.026	0.267
Nebraska	0.974	11.4	−0.033	0.634	−0.115	−0.149	−0.208	0.018	0.135
Nevada	0.955	6.1	−0.279	0.770	−0.496	−0.737	−0.712	0.296	0.324
New Hampshire	0.981	11.2	0.294	0.406	−0.187	−0.206	−0.048	−0.026	−0.147
New Jersey	1.094	13.7	0.404	0.436	0.171	0.201	0.254	0.098	0.055
New Mexico	0.948	9.6	−0.041	0.385	−0.413	−0.384	−0.290	−0.323	0.325
New York	1.384	13.9	0.318	0.382	−0.180	−0.501	−0.263	−0.436	−0.506
North Carolina	0.865	7.9	0.120	0.256	0.427	0.331	0.404	−0.093	0.154
North Dakota	0.889	10.5	0.330	0.423	0.210	0.016	0.075	0.129	0.103
Ohio	1.025	13.6	0.593	0.429	0.627	0.450	0.593	0.123	0.150
Oklahoma	0.835	17.2	0.109	0.259	0.063	0.208	0.287	0.001	0.039
Oregon	1.093	8.5	0.139	0.306	0.081	0.069	0.057	−0.185	−0.148
Pennsylvania	1.002	11.6	0.562	0.163	0.372	0.026	0.206	0.229	−0.101
Rhode Island	1.139	16.4	0.340	0.693	0.322	0.586	0.764	0.231	0.540
South Carolina	0.890	8.2	0.131	0.306	0.145	0.167	0.171	0.093	0.075
South Dakota	0.964	16.8	0.048	0.124	−0.366	−0.444	−0.69	−0.123	0.500
Tennessee	0.771	11.5	0.332	0.726	0.624	0.504	0.279	0.273	−0.226
Texas	0.895	15.1	0.270	0.472	−0.367	−0.509	−0.252	0.094	0.199
Utah	0.831	7.5	−0.023	0.465	−0.237	0.064	0.179	0.002	0.082
Vermont	1.236	32.6	0.319	0.104	0.215	0.103	−0.065	−0.078	−0.009
Virginia	0.902	15.4	0.627	0.272	0.386	0.356	−0.029	0.621	−0.218
Washington	1.033	11.0	0.527	0.070	0.622	0.615	0.514	0.003	−0.177
West Virginia	0.877	6.0	0.331	0.102	0.503	0.386	0.148	−0.085	−0.042
Wisconsin	1.009	11.5	0.450	0.113	0.054	−0.106	−0.120	−0.080	−0.224
Wyoming	1.028	13.5	0.234	0.727	−0.407	−0.488	−0.402	−0.282	−0.061
U.S. Total	1.000	21.2	0.440	0.618	0.167	0.101	0.095	−0.035	−0.291
New England	1.084	19.6	0.416	0.291	0.180	0.262	0.359	0.236	−0.002
Mid Atlantic	1.203	19.9	0.429	0.631	0.167	0.051	0.058	0.108	−0.284
South Atlantic	0.921	13.4	0.529	0.554	0.398	0.291	0.143	−0.038	−0.264
E.S. Central	0.783	13.9	0.265	0.658	0.214	0.155	−0.071	0.066	−0.019
W.S. Central	0.882	14.6	0.258	0.359	−0.112	−0.298	−0.068	0.125	0.096
E.N. Central	1.015	14.7	0.458	0.427	0.323	0.009	0.136	0.127	−0.113
W.N. Central	1.040	17.0	0.392	0.434	0.082	0.056	0.126	0.047	0.006
Mountain	0.945	12.9	0.241	0.452	0.060	0.060	0.199	0.037	0.102
Pacific	0.978	23.9	0.129	0.223	−0.116	−0.263	0.015	−0.173	0.025

Table XVI. Correlation of Local Revenue Per Pupil with Socioeconomic Variables, by State, Region, and Nation.

State	Amount	% +/−	Correlation With						
			Wealth	Effort	Urbanization	Enrollment	% Black	% Span.	Poverty
Alabama	0.232	62.0	0.292	0.346	0.297	0.149	0.258	0.452	−0.215
Alaska	0.783	40.2	0.515	0.399	0.626	0.426	0.769	0.777	−0.457
Arizona	0.673	47.3	0.591	0.444	0.271	0.125	−0.082	−0.082	−0.197
Arkansas	0.461	35.4	0.797	0.225	0.697	0.530	−0.043	0.153	−0.448
California	1.130	40.2	0.706	0.506	0.168	0.239	0.249	−0.095	−0.177
Colorado	1.184	29.3	0.731	0.562	0.129	0.453	0.314	−0.339	−0.246
Connecticut	1.435	47.2	0.350	0.857	−0.052	0.003	0.030	−0.101	−0.109
Delaware	0.491	38.7	0.878	−0.079	0.661	0.328	−0.186	0.392	−0.450
Dist. of Col.	2.230	0.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Florida	0.611	35.0	0.866	0.035	0.241	0.236	−0.350	0.234	−0.492
Georgia	0.443	56.5	0.859	0.302	0.694	0.801	0.055	0.528	−0.558
Hawaii	0.022	0.0	0.000	0.0000	0.000	0.000	0.000	0.000	0.000
Idaho	0.574	27.5	0.392	0.492	−0.010	−0.072	−0.215	−0.035	0.057
Illinois	1.569	51.1	0.821	0.426	0.120	−0.085	−0.105	0.007	−0.351
Indiana	0.852	36.7	0.485	0.769	0.119	0.086	0.121	0.161	−0.112
Iowa	1.410	17.4	0.470	0.809	−0.067	−0.083	−0.051	0.099	−0.175
Kansas	1.153	35.0	−0.032	0.888	−0.367	−0.270	−0.334	0.026	0.436
Kentucky	0.432	55.9	0.893	−0.015	0.767	0.712	0.480	0.307	−0.777
Louisiana	0.481	35.1	0.687	−0.024	0.641	0.603	−0.187	0.309	−0.550
Maine	0.844	70.4	0.538	0.629	0.112	0.137	−0.164	−0.117	−0.347
Maryland	1.212	24.6	0.932	−0.322	0.192	0.329	−0.503	0.728	−0.762
Massachusetts	1.663	31.4	0.640	0.682	−0.267	−0.156	−0.154	−0.181	−0.399
Michigan	1.171	42.1	0.619	0.682	0.391	−0.082	0.017	0.101	−0.288
Minnesota	1.051	29.0	0.632	−0.015	0.404	0.344	0.360	0.138	−0.285
Mississippi	0.304	47.1	0.777	0.274	0.687	0.670	−0.076	0.200	−0.413
Missouri	0.967	43.6	0.853	0.232	0.418	0.281	0.231	0.286	−0.406
Montana	1.032	29.5	0.611	0.834	−0.073	−0.292	−0.108	−0.075	−0.106
Nebraska	1.099	24.1	−0.053	0.871	−0.406	−0.263	−0.272	−0.163	0.302
Nevada	1.008	26.0	0.510	0.605	−0.118	−0.337	−0.452	−0.059	−0.041
New Hampshire	1.461	43.5	0.691	0.914	−0.137	−0.171	−0.092	0.020	−0.393
New Jersey	1.556	32.6	0.747	0.422	−0.112	−0.293	−0.266	−0.250	−0.452
New Mexico	0.337	46.1	0.355	0.400	−0.032	−0.075	−0.046	−0.248	−0.189
New York	1.402	41.4	0.801	−0.042	0.363	0.170	0.282	0.233	−0.136
North Carolina	0.351	44.8	0.819	0.046	0.527	0.587	−0.171	−0.018	−0.607
North Dakota	0.994	27.0	0.610	0.791	0.326	−0.068	−0.112	0.178	−0.135
Ohio	1.225	36.2	0.671	0.736	0.583	0.368	0.412	0.261	−0.111
Oklahoma	0.598	52.5	0.498	0.678	0.246	0.420	0.103	−0.040	−0.294
Oregon	1.469	16.0	0.288	0.564	−0.012	−0.094	−0.158	−0.253	−0.211
Pennsylvania	0.983	35.7	0.834	0.047	0.436	0.096	0.161	0.282	−0.464
Rhode Island	1.086	22.0	0.644	0.617	0.441	0.606	0.489	−0.080	0.153
South Carolina	0.341	37.3	0.810	0.550	0.550	0.378	−0.496	−0.052	−0.853
South Dakota	1.119	21.7	0.426	0.884	0.016	−0.052	−0.665	−0.441	−0.151
Tennessee	0.451	47.4	0.746	0.595	0.803	0.730	0.452	0.591	−0.615
Texas	0.626	54.7	0.796	0.374	−0.009	0.165	0.029	−0.248	−0.267
Utah	0.599	35.6	0.578	0.205	0.241	−0.026	−0.119	0.298	0.358
Vermont	1.263	62.4	0.623	0.902	0.202	0.037	−0.004	−0.035	−0.221
Virginia	0.852	36.6	0.823	0.212	0.435	0.483	−0.022	0.627	−0.525
Washington	0.865	43.6	0.681	0.513	0.420	0.495	0.312	−0.191	−0.397
West Virginia	0.522	35.5	0.783	0.173	0.699	0.522	0.036	0.267	−0.684
Wisconsin	1.432	29.6	0.878	−0.201	0.376	0.203	0.148	0.164	−0.471
Wyoming	0.981	45.6	0.394	0.742	−0.381	−0.557	−.0535	−0.336	−0.037
U.S. Total	1.00	58.4	0.744	0.559	0.287	0.185	−0.157	−0.043	−0.502
New England	1.454	43.6	0.525	0.735	0.004	0.009	0.006	−0.046	−0.368
Mid Atlantic	1.297	42.5	0.820	0.101	0.340	0.180	0.134	0.231	−0.280
South Atlantic	0.656	66.0	0.726	0.544	0.516	0.547	0.053	0.120	−0.542
E.S. Central	0.359	59.6	0.748	0.342	0.679	0.568	0.023	0.313	−0.531
W.S. Central	0.579	52.9	0.737	0.173	0.188	0.233	−0.104	−0.103	−0.343
E.N. Central	1.268	46.9	0.757	0.469	0.314	0.075	0.068	0.168	−0.253
W.N. Central	1.122	33.2	0.557	0.459	0.067	0.041	−0.009	0.054	−0.227
Mountain	0.799	51.8	0.541	0.494	0.158	0.200	0.107	−0.341	−0.348
Pacific	1.085	44.5	0.604	0.511	0.110	0.178	0.248	0.005	−0.133

Table XVII. Correlation of State Revenue Per Pupil with Socioeconomic Variables, by State, Regtion, and Nation.

State	Amount	% +/-	Correlation With						
			Wealth	Effort	Urbanization	Enrollment	% Black	% Span.	Poverty
Alabama	0.840	22.9	−0.207	0.565	−0.284	−0.160	−0.291	−0.307	0.201
Alaska	2.251	14.1	−0.417	0.612	−0.630	−0.578	−0.264	−0.320	0.424
Arizona	1.161	24.7	0.184	0.363	0.242	0.190	0.066	0.063	−0.117
Arkansas	0.664	18.3	−0.699	0.578	−0.675	−0.513	0.085	−0.186	0.539
California	0.950	24.9	−0.374	0.063	0.054	0.119	−0.123	0.098	−0.013
Colorado	0.656	22.2	−0.652	−0.233	−0.367	−0.675	−0.592	0.172	0.164
Connecticut	0.640	40.0	−0.091	−0.086	−0.057	−0.090	−0.073	0.121	0.028
Delaware	1.689	9.4	0.210	0.682	0.131	−0.061	0.393	−0.235	0.188
Dist. of Col.	0.000	0.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Florida	1.375	6.9	−0.448	0.656	−0.343	−0.341	0.086	−0.257	0.381
Georgia	0.919	14.0	−0.720	0.332	−0.670	−0.696	−0.009	−0.461	0.623
Hawaii	1.846	0.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Idaho	0.824	16.6	−0.245	0.342	−0.006	0.088	0.134	0.063	0.068
Illinois	0.905	32.6	−0.666	0.153	0.133	0.205	0.223	0.154	0.284
Indiana	0.754	20.0	−0.302	−0.127	−0.105	−0.061	−0.051	−0.281	−0.005
Iowa	0.729	13.0	0.025	0.472	0.275	0.406	0.343	0.219	−0.134
Kansas	0.783	15.7	−0.489	0.623	−0.412	−0.306	−0.265	−0.320	0.305
Kentucky	1.027	12.3	−0.807	0.455	−0.658	−0.538	−0.300	−0.354	0.780
Louisiana	1.181	13.5	−0.692	0.674	−0.668	−0.684	0.203	−0.534	0.607
Maine	0.883	52.4	−0.623	0.394	−0.479	−0.404	−0.002	−0.083	0.487
Maryland	1.005	20.6	−0.558	0.798	−0.123	−0.223	0.547	−0.386	0.712
Massachusetts	0.616	32.9	−0.403	0.529	0.057	0.283	0.295	0.177	0.221
Michigan	1.282	16.0	−0.358	0.051	−0.163	−0.059	0.018	−0.134	0.125
Minnesota	1.280	24.7	−0.384	0.562	−0.407	−0.527	−0.560	−0.292	0.045
Mississippi	0.859	10.0	−0.515	0.479	−0.542	−0.439	0.054	−0.321	0.388
Missouri	0.811	22.4	0.069	0.077	−0.283	−0.224	0.034	−0.148	0.382
Montana	0.641	20.8	0.407	0.215	0.289	0.242	0.294	−0.015	−0.143
Nebraska	0.417	13.4	0.139	−0.285	0.358	0.206	0.166	0.187	−0.234
Nevada	0.920	19.7	−0.746	0.109	0.517	−0.209	−0.025	0.160	0.332
New Hampshire	0.185	70.2	−0.355	0.208	−0.496	−0.374	−0.159	−0.216	0.191
New Jersey	0.609	37.6	−0.473	0.283	0.016	0.351	0.365	0.201	0.477
New Mexico	1.409	9.2	−0.422	0.854	−0.614	−0.541	−0.371	0.277	0.552
New York	1.849	25.5	−0.703	0.599	−0.624	−0.429	−0.525	−0.457	−0.148
North Carolina	1.195	6.2	−0.509	0.746	−0.492	−0.435	0.233	−0.328	0.543
North Dakota	0.603	19.6	−0.179	0.290	−0.254	−0.146	0.051	−0.144	0.177
Ohio	0.660	25.5	−0.573	−0.132	−0.548	−0.305	−0.325	−0.108	0.105
Oklahoma	0.650	33.0	−0.588	0.610	−0.487	−0.444	−0.091	0.051	0.432
Oregon	0.600	29.6	−0.373	0.452	−0.488	−0.566	−0.522	0.052	0.129
Pennsylvania	1.229	26.5	−0.642	0.703	−0.244	0.273	0.236	−0.019	0.586
Rhode Island	0.773	24.6	−0.353	0.568	−0.370	−0.090	0.249	0.230	0.278
South Carolina	0.959	39.7	0.337	0.947	0.082	−0.104	−0.170	−0.030	−0.146
South Dakota	0.279	19.2	−0.310	−0.135	−0.096	−0.134	0.353	0.187	0.283
Tennessee	0.783	9.1	−0.624	0.179	−0.414	−0.397	−0.250	−0.462	0.649
Texas	0.803	20.3	−0.514	0.288	−0.404	−0.418	−0.091	0.062	0.328
Utah	1.141	18.6	−0.604	0.393	−0.477	−0.171	−0.090	−0.531	0.012
Vermont	0.986	59.1	0.139	0.877	−0.032	−0.191	−0.103	0.107	−0.128
Virginia	0.740	18.0	−0.649	0.421	−0.398	−0.312	−0.156	−0.437	0.605
Washington	1.460	20.5	−0.296	0.599	−0.112	−0.346	−0.236	−0.029	−0.081
West Virginia	1.069	6.9	−0.793	0.477	−0.591	−0.477	0.181	−0.200	0.756
Wisconsin	0.798	44.3	−0.506	0.693	−0.336	−0.087	−0.014	−0.137	0.392
Wyoming	0.923	32.5	−0.349	−0.262	0.005	0.336	0.340	0.162	0.231
U.S. Total	1.000	43.3	−0.157	0.511	−0.094	0.168	−0.030	0.023	0.029
New England	0.647	47.8	−0.263	0.305	−0.134	0.066	0.043	0.060	0.301
Mid Atlantic	1.403	44.0	−0.338	0.782	−0.173	0.107	−0.062	0.008	0.200
South Atlantic	1.047	30.7	−0.171	0.262	−0.213	−0.079	−0.249	0.175	0.127
E.S. Central	0.871	18.2	−0.295	0.556	−0.372	−0.298	−0.295	−0.291	0.320
W.S. Central	0.843	26.7	−0.454	0.689	−0.346	−0.232	0.340	−0.059	0.415
E.N. Central	0.890	37.1	−0.343	0.289	−0.113	0.107	0.063	0.034	0.125
W.N. Central	0.848	40.6	0.004	0.489	−0.056	−0.107	−0.095	−0.167	−0.016
Mountain	0.969	34.5	−0.214	0.024	−0.096	−0.158	−0.053	0.424	0.341
Pacific	1.029	35.5	−0.200	0.071	−0.048	−0.096	−0.177	−0.149	−0.94

Table XVIII. Correlation of Federal Revenue Per Pupil, by State, Region, and the Nation.

State	Amount	% +/−	Correlation With						
			Wealth	Effort	Urbanization	Enrollment	% Black	% Span.	Poverty
Alabama	1.430	36.2	−0.252	0.213	−0.292	−0.453	0.045	−0.008	0.447
Alaska	1.589	28.5	0.330	0.124	0.496	−0.087	0.282	0.296	−0.318
Arizona	1.196	122.7	−0.406	0.192	−0.411	−0.186	−0.000	−0.082	0.721
Arkansas	1.767	71.4	−0.307	0.099	−0.229	−0.142	0.146	−0.119	0.265
California	0.964	79.5	0.337	0.066	−0.014	−0.027	0.409	−0.042	0.392
Colorado	1.104	74.0	−0.135	−0.099	0.149	0.003	0.408	0.157	0.217
Connecticut	0.528	125.3	−0.206	−0.098	0.408	0.384	0.547	0.348	0.817
Delaware	0.968	102.0	−0.361	−0.002	0.025	0.318	0.611	0.632	0.689
Dist. of Col.	2.649	0.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Florida	1.348	48.2	−0.037	0.017	−0.135	0.361	−0.112	0.599	0.042
Georgia	1.196	45.3	−0.437	0.151	−0.057	−0.232	0.287	0.039	0.423
Hawaii	1.616	0.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Idaho	1.032	78.1	−0.118	−0.267	−0.208	−0.227	0.418	−0.022	0.085
Illinois	0.821	84.1	−0.257	0.158	0.364	0.669	0.643	0.556	0.628
Indiana	0.572	61.9	−0.227	0.092	0.213	0.185	0.476	0.329	0.516
Iowa	0.680	33.3	−0.175	−0.032	0.042	0.182	0.216	0.221	0.306
Kansas	1.031	74.7	−0.324	−0.205	0.061	−0.036	0.461	0.238	0.157
Kentucky	1.581	70.7	−0.638	0.407	−0.406	−0.375	−0.148	−0.293	0.665
Louisiana	1.194	53.0	−0.556	0.379	−0.366	−0.313	0.360	−0.178	0.603
Maine	0.772	100.0	−0.241	−0.078	0.045	0.123	0.844	0.654	0.189
Maryland	1.177	36.6	−0.225	0.400	−0.089	−0.066	0.290	0.150	0.413
Massachusetts	0.675	90.6	−0.278	−0.061	0.241	0.301	0.393	0.289	0.494
Michigan	0.655	83.2	−0.141	0.075	0.533	0.746	0.807	0.254	0.692
Minnesota	0.847	97.9	−0.203	0.009	−0.003	0.185	0.253	0.020	0.458
Mississippi	1.759	62.1	−0.502	0.333	−0.211	−0.282	0.436	0.090	0.572
Missouri	0.849	114.3	−0.169	0.235	−0.150	−0.043	0.209	0.129	0.342
Montana	1.305	117.4	−0.137	−0.129	0.379	0.508	0.686	0.024	0.180
Nebraska	0.772	100.4	−0.179	−0.216	−0.008	−0.230	−0.257	0.047	0.018
Nevada	1.323	38.2	−0.572	0.015	−0.408	0.346	0.538	0.261	0.547
New Hampshire	0.672	119.4	−0.058	−0.372	0.148	0.232	0.855	0.517	0.231
New Jersey	0.672	116.2	−0.523	0.272	0.394	0.642	0.769	0.537	0.809
New Mexico	2.198	76.2	−0.363	0.227	−0.406	−0.332	−0.375	−0.025	0.602
New York	0.922	83.3	0.189	−0.427	0.714	0.689	0.831	0.685	0.739
North Carolina	1.362	51.1	−0.703	0.384	−0.375	−0.367	0.492	0.160	0.807
North Dakota	1.269	87.5	−0.230	−0.536	−0.025	0.444	0.258	0.155	−0.100
Ohio	0.725	152.6	−0.038	0.468	0.236	0.267	0.311	0.012	0.323
Oklahoma	0.969	107.9	−0.434	0.485	−0.284	−0.300	0.089	0.238	0.282
Oregon	0.761	66.1	0.039	−0.319	0.263	0.490	0.537	0.469	0.293
Pennsylvania	0.712	96.7	0.059	0.230	0.635	0.875	0.901	0.493	0.587
Rhode Island	0.956	97.2	−0.082	0.181	−0.128	0.100	0.613	0.705	0.639
South Carolina	1.538	48.7	−0.656	−0.228	−0.327	−0.145	0.718	0.162	0.741
South Dakota	1.350	135.5	−0.572	−0.480	−0.174	−0.189	0.558	0.275	0.482
Tennessee	1.341	50.2	−0.644	0.117	0.344	−0.431	−0.036	−0.324	0.738
Texas	1.124	98.8	−0.375	−0.274	−0.092	−0.224	−0.128	0.387	0.351
Utah	0.896	46.9	−0.097	0.071	−0.250	−0.443	0.420	0.194	0.062
Vermont	0.621	95.1	−0.035	0.226	0.041	−0.046	−0.096	−0.128	0.222
Virginia	1.516	48.0	0.288	0.101	0.121	0.572	−0.183	0.548	0.051
Washington	1.088	185.4	−0.153	−0.197	−0.140	−0.077	0.045	0.050	0.188
West Virginia	1.531	69.9	−0.500	0.327	−0.378	−0.211	0.013	−0.303	0.542
Wisconsin	0.572	57.9	−0.345	0.396	0.055	0.445	0.448	0.205	0.502
Wyoming	0.729	125.1	−0.264	0.072	−0.136	0.011	0.146	0.114	0.610
U.S. Total	1.000	90.2	−0.272	−0.108	0.031	0.163	0.362	0.170	0.476
New England	0.664	103.9	−0.233	−0.056	0.190	0.220	0.369	0.209	0.488
Mid Atlantic	0.805	93.7	0.002	0.000	0.633	0.564	0.816	0.567	0.712
South Atlantic	1.379	51.7	−0.188	0.123	−0.078	0.099	0.271	0.227	0.381
E.S. Central	1.502	57.9	−0.519	0.269	−0.325	−0.360	0.131	−0.125	0.621
W.S. Central	1.179	90.1	−0.362	0.018	−0.193	−0.235	0.044	0.245	0.374
E.N. Central	0.695	106.2	−0.079	0.208	0.295	0.419	0.482	0.247	0.452
W.N. Central	0.868	100.1	−0.211	−0.093	−0.052	0.012	0.171	0.123	0.331
Mountain	1.243	96.2	−0.315	0.084	−0.157	−0.070	0.098	0.206	0.574
Pacific	0.990	101.7	−0.240	−0.059	−0.028	−0.012	0.256	−0.037	0.273

much more than the average Federal education assistance, scores the lowest on every resource measure except teachers per pupil, on which it is about equal with Utah. It is true that Alabama is a poor State, but as Table XIX shows, it is far from the poorest (Arkansas, Louisiana, Mississippi, and South Carolina score lower on the measure of wealth; Mississippi is much lower). Alabama scores the lowest of all the States on the measure of effort (which allows for variations in wealth).

At the other extreme is New York State, which scores the highest of all States on effort and on all the resource measures except the two measuring staff per pupil. It is surpassed on these measures only by the rural States Vermont and Kansas and by the District of Columbia. Furthermore, New York provided that high level of resources with less than average Federal assistance, and it is not the wealthiest State. Connecticut, Illinois, and New Jersey score higher on wealth, and four or five others are quite close to New York's level.

A comparison of the wealth and effort scores of the States in Table XIX reveals that the States with higher wealth scores also tend to have higher effort scores. In fact, the unweighted coefficient of correlation between the two measures across States is .56. At first, this result might suggest that the effort measure has not properly controlled for wealth. On more careful examination, however, the effort measure appears to be performing quite well, and an interesting phenomenon comes to light. Table XX shows the correlation between wealth and effort within each State. Surprisingly, only in five States is it positive. Thus, it appears that the wealthier districts within most States tend to exert less effort even though they provide more resources (see Table XV). When the wealth of an entire State is higher, on the other hand, effort tends to be higher also. These facts may indicate that State education systems have a significant effect on the level of resources offered by their districts, and that wealthier districts do not depart from the norm of their States as much as they could afford to. These phenomena are of course at the heart of the school finance issue and require further study.

The analysis shows that, in 1969-70, there was not as much variation in resource distribution as is sometimes thought. One commonly used measure, the ratio of highest spending to lowest spending district in a State, indicates disparities in some States of 10:1 or more. When the analysis controls for district size and grade-level coverage, the disparity ratio of the highest to the lowest decile is less than 2:1. Furthermore, inequality within States accounts for only half of the total, the remainder being due to variations among States. Within-State variation is not very strongly related to minority or poverty populations, but is related to wealth and to effort. The variations within States due to wealth are chiefly in the upper 10 or 20 percent of the population. Whether or not these variations with welatth are sufficient to represent inequality of educational opportunity must be based on judgment – as to the disadvantage to the children affected as well as to the extent to which it is desired to permit variations due to effort.

Table XIX. Socioeconomic Status by State, Region, and the Nation.

State	Wealth		Effort		Urbanization		Enrollment		% Black		% Span.		% Poverty	
	Mean	% +/-	Mean	% +/-	Mean	% +/-	Mean	% +/-	Mean	% +/-	Mean	% +/-	Mean	% +/-
Alabama	39.09	10.2	9.84	19.7	1.18	92.2	24777	106.8	24.1	63.9	0.4	75.9	20.9	32.5
Alaska	53.90	9.3	20.49	17.0	0.55	43.3	16502	76.7	2.7	58.5	2.2	37.9	6.4	86.9
Arizona	48.66	18.7	14.27	18.3	1.73	51.4	11757	98.5	3.0	168.1	18.4	73.7	11.6	76.8
Arkansas	37.52	11.4	11.51	14.1	0.88	109.8	5950	128.6	20.2	91.2	0.5	91.3	24.0	46.6
California	52.14	17.0	16.00	15.4	2.06	40.1	111789	196.8	5.9	123.7	14.0	62.7	8,1	48.0
Colorado	46.72	12.7	16.29	12.4	1.74	57.5	33789	103.9	2.5	144.8	10.9	82.3	8.1	52.8
Connecticut	58.28	16.1	15.00	33.8	1.75	58.7	10002	76.2	5.1	152.3	2.2	102.0	4.8	63.1
Delaware	49.45	17.7	15.87	10.9	1.41	66.8	8017	55.1	13.7	102.2	1.1	53.5	8.1	62.8
Dist. of Col.	51.82	0.0	19.82	0.0	3.00	0.0	147609	0.0	71.1	0.0	2.1	0.0	11.6	0.0
Florida	48.28	12.1	15.21	9.7	1.46	48.4	90952	85.3	15.9	47.2	6.4	130.6	13.1	39.1
Georgia	44.54	14.6	11.35	11.4	1.19	84.6	29607	117.6	25.7	62.9	0.6	75.2	17.6	52.8
Hawaii	48.49	0.0	12.66	0.0	2.79	0.0	179364	0.0	1.1	0.0	3.1	0.0	6.3	0.0
Idaho	42.85	8.1	12.50	13.2	0.74	106.6	6545	105.4	0.3	293.6	2.8	99.4	10.4	33.7
Illinois	63.47	26.0	16.12	17.3	1.85	53.1	143049	163.9	10.6	133.9	3.0	95.8	6.6	58.9
Indiana	49.78	10.2	12.85	16.2	1.42	78.5	20556	148.1	7.2	172.2	1.3	226.2	6.8	40.0
Iowa	50.16	7.1	17.71	12.3	1.00	106.4	7900	148.8	1.0	188.6	0.6	123.2	7.8	39.3
Kansas	45.77	11.6	17.45	27.5	1.22	93.9	16926	130.5	4.4	139.4	2.3	96.9	8.6	44.8
Kentucky	43.09	15.6	12.49	10.1	0.91	108.6	20532	145.7	6.3	130.4	0.3	115.9	20.1	68.2
Louisiana	38.36	11.4	16.00	13.5	1.38	75.4	36833	94.0	31.0	44.4	1.7	96.5	23.6	45.0
Maine	42.80	11.3	15.92	34.6	0.75	122.7	3258	93.7	0.3	455.8	0.4	142.2	10.1	49.6
Maryland	53.47	15.5	16.72	10.0	1.68	54.5	114524	56.4	17.4	95.2	1.4	64.3	7.5	65.3
Massachuesetts	53.54	14.5	18.10	23.2	1.76	54.6	16330	161.3	2.5	190.3	1.0	89.2	5.3	49.7
Michigan	50.41	14.3	19.05	17.1	1.54	68.5	45655	197.7	9.5	167.5	1.3	87.9	6.4	53.6
Minnesota	48.64	15.3	18.82	15.5	1.35	77.2	14387	133.8	0.6	217.3	0.6	110.1	7.5	79.4
Mississippi	35.59	11.6	11.88	11.5	0.63	135.5	7215	119.3	38.5	46.4	0.4	126.8	32.6	41.4
Missouri	49.11	26.6	14.54	11.1	1.17	77.5	11152	150.2	5.6	184.7	0.8	104.2	10.6	82.1
Montana	46.18	11.5	14.78	16.8	1.19	89.4	4955	100.6	0.2	183.2	1.3	59.4	8.9	52.6
Nebraska	45.01	10.7	14.45	22.4	1.47	79.1	18810	128.6	2.7	158.8	1.6	123.8	8.0	63.1
Nevada	50.10	4.6	15.36	12.0	1.73	41.2	47379	59.5	5.7	67.2	5.6	22.3	6.4	24.8
New Hampshire	48.99	10.7	14.79	28.5	0.96	107.5	4115	101.3	0.4	233.8	0.4	86.8	5.6	33.1
New Jersey	57.22	18.7	16.11	16.9	1.71	47.4	10949	155.4	9.4	158.9	3.8	161.0	5.5	83.8
New Mexico	40.49	12.7	15.45	19.1	1.24	86.5	28906	118.5	1.8	97.3	37.9	54.7	20.1	56.8
New York	55.26	16.0	22.92	15.8	1.92	55.1	361954	142.2	9.3	101.7	6.3	110.4	7.3	51.3
North Carolina	44.51	13.2	12.50	10.7	0.82	115.7	18259	113.6	23.8	58.7	0.4	149.5	17.7	51.3
North Dakota	45.50	8.2	14.38	15.7	0.72	117.5	4382	101.0	0.1	307.7	0.2	153.9	10.4	57.8
Ohio	51.27	13.1	15.20	17.7	1.56	71.3	25804	161.0	7.9	144.4	0.9	192.0	6.8	54.7
Oklahoma	42.90	11.9	11.46	33.2	1.49	75.5	22897	132.4	6.7	100.7	1.5	109.7	12.8	49.9
Oregon	50.72	10.6	17.38	16.3	1.36	78.5	17530	146.2	1.0	184.2	1.7	85.1	7.9	40.0
Pennsylvania	47.78	14.2	18.01	13.8	1.37	79.7	42114	217.1	6.4	176.9	0.8	110.3	7.0	50.5
Rhode Island	51.80	6.5	14.54	13.8	1.91	47.5	10404	76.5	2.1	147.2	0.7	76.8	6.9	46.2
South Carolina	88.39	9.3	12.17	24.3	0.73	93.7	19396	98.9	30.7	45.6	0.4	123.1	20.9	46.5
South Dakota	44.07	8.0	13.77	17.3	0.73	125.1	4965	127.1	0.3	394.0	0.5	155.4	13.3	61.0
Tennessee	43.86	13.1	10.57	13.9	1.19	94.3	38102	124.1	15.9	93.5	0.4	84.2	18.8	43.6
Texas	49.32	20.2	11.23	16.7	2.01	52.9	46046	149.7	11.8	99.8	19.9	117.8	15.9	58.7
Utah	44.93	8.6	14.53	12.3	1.68	52.1	27242	76.9	0.5	151.4	3.9	53.8	7.9	37.2
Vermont	49.05	10.1	18.10	52.8	0.36	118.1	1611	110.9	0.1	303.5	0.6	147.0	7.3	47.4
Virginia	47.77	20.0	13.41	15.2	1.22	95.0	30873	118.7	18.1	89.1	1.0	96.1	13.6	67.5
Washington	54.39	14.2	16.18	20.5	1.45	72.2	20834	124.4	1.6	155.9	2.4	169.5	6.9	58.7
West Virginia	42.64	11.8	13.92	10.9	0.62	108.1	16087	97.8	4.0	105.3	0.4	77.5	18.5	45.4
Wisconsin	51.18	18.0	18.16	12.0	1.39	81.5	22819	177.6	2.5	202.0	0.9	112.7	6.4	62.5
Wyoming	45.14	8.5	18.74	18.5	0.65	49.8	6260	94.1	0.8	131.1	5.6	78.8	8.5	32.4
U.S. Total	49.80	20.2	15.72	26.5	1.53	69.9	71702	276.5	10.3	136.5	4.6	202.8	10.6	80.3
New England	53.21	16.5	16.60	30.0	1.58	66.4	11265	161.4	2.7	201.1	1.2	125.1	5.8	59.0
Mid Atlantic	53.23	17.6	19.98	21.3	1.70	62.0	189085	209.7	8.4	136.2	4.0	148.1	6.8	57.4
South Atlantic	46.49	17.0	13.81	19.0	1.21	81.8	51396	120.0	21.2	78.5	1.9	233.9	14.9	59.4
E.S. Central	40.80	15.2	11.08	16.9	1.01	104.3	24419	142.1	20.2	89.7	0.3	99.6	22.3	52.6
W.S. Central	45.26	21.2	12.21	23.9	1.71	65.6	37487	153.1	15.7	95.2	12.2	165.2	17.8	62.7
E.N. Central	53.86	21.6	16.30	20.9	1.59	68.1	58196	234.6	8.3	159.5	1.6	145.4	6.6	54.6
W.N. Central	48.09	17.4	16.62	20.6	1.18	88.9	12233	147.3	2.6	240.5	0.9	143.2	8.9	71.5
Mountain	45.76	14.3	15.03	17.1	1.49	66.5	23097	121.0	2.0	174.9	13.0	120.0	10.5	72.7
Pacific	52.23	16.1	16.07	16.9	1.94	47.6	94277	208.2	4.9	138.7	11.2	82.9	7.9	49.1

Table XX. Correlation between Wealth and Effort, for States

State	r	State	r
Alabama	−.40	Montana	−.19
Alaska	−.45	Nebraska	−.51
Arizona	−.19	Nevada	−.29
Arkansas	−.32	New Hampshire	.40
California	−.13	New Jersey	−.20
Colorado	−.10	New Mexico	−.63
Connecticut	−.09	New York	−.51
Delaware	−.41	North Carolina	−.49
Dist. of Col.	---	North Dakota	.12
Florida	−.37	Ohio	.05
Georgia	−.15	Oklahoma	−.19
Hawaii	---	Oregon	−.54
Idaho	−.38	Pennsylvania	−.34
Illinois	−.10	Rhode Island	−.00
Indiana	−.05	South Carolina	.34
Iowa	−.07	South Dakota	−.02
Kansas	−.44	Tennessee	−.04
Kentucky	−.41	Texas	−.16
Louisiana	−.65	Utah	−.53
Maine	−.14	Vermont	.34
Maryland	−.51	Virginia	−.31
Massachusetts	−.06	Washington	−.16
Michigan	−.06	West Virgina	−.44
Minnesota	−.59	Wisconsin	−.42
Mississippi	−.30	Wyoming	−.16
Missouri	−.15		

NOTES TO SECTION V

1. This number was reduced to 4,556 in the present study. ELSEGIS Part A (staff) or Part B (finance) data was missing for 154 districts; one district reported no teachers; another reported no salary dollars; and four reported negative or zero local revenue. The reader is referred to the SDEL 3 Users Manual (available from NCES) on Census/ELSEGIS.

2. In computing national or State norms, as well as other statistics, data from each district in the sample are weighted by an appropriate inflation factor to correct for variations in sampling probability. Since our sample was limited only to districts included in both the Part A and Part B data, we weighted by the greater of the Part A or Part B inflation factor, as listed in the Census/ELSEGIS phase V technical documentation.

3. Professional instructional staff salaries averaged $462 per pupil, out of a total current nontransportation budget of $702 per pupil. Census/ELSEGIS does not separate teachers' salaries from this figure. Teachers, however, comprise about 88 percent of the professional instructional staff, so that an estimate of $407 per pupil for teachers' salaries seems reasonable.

4. This category includes classroom teachers, principals, assistant principals, supervisors of instruction, teachers of the homebound, librarians, guidance staff, psychological staff, and audiovisual staff. Data on degree level of teachers is not given separately.

5. Since these averages were derived from a large but somewhat non-statistical sample they are not in perfect agreement with Census/ELSEGIS aggregate salary data. The national average staff salary derived by applying these averages to actual distributions of staff by degree level (from Census/ELSEGIS) was 102.8 percent of the true national average staff salary, as determined entirely from Census/ELSEGIS. This discrepancy is not considered to be significant.

6. A district was classified as "suburban SMSA" if it was located in a SMSA, was not the center city, and at least 50 percent of its population resided in urbanized areas. It was classified as "other urban" if it was not in a SMSA, and at least 50 percent of its population was in urbanized areas. Districts with less than 50 percent of population in urbanized areas were classified as "rural".

7. The nine regions used in this study are:

New England	Mid Atlantic	South Atlantic	East South Central
Connecticut	New Jersey	Delaware	Alabama
Maine	New York	District of Columbia	Kentucky
Massachusetts	Pennsylvania	Florida	Mississippi
New Hampshire		Georgia	Tennessee
Rhode Island		Maryland	
Vermont		North Carolina	
		South Carolina	
		Virginia	
		West Virginia	

West South Central	East North Central	West North Central	Mountain	Pacific
Arkansas	Indiana	Iowa	Arizona	Alaska
Louisiana	Illinois	Kansas	Colorado	California
Oklahoma	Michigan	Minnesota	Idaho	Hawaii
Texas	Ohio	Missouri	Montana	Oregon
	Wisconsin	Nebraska	Nevada	Washington
		North Dakota	New Mexico	
		South Dakota	Utah	
			Wyoming	

8. These ratios are given in the following table.

Region	Center City/SMSA	Suburban	Other Urban	Rural
New England	1.04	1.04	.90	.88
Mid Atlantic	1.20	1.14	1.05	1.00
South Atlantic	.99	1.04	.93	.83
East South Central	.89	.89	.77	.75
West South Central	.83	.78	.76	.75
East North Central	1.18	1.06	.99	.91
West North Central	1.04	.99	.93	.82
Mountain	.99	.93	.89	.83
Pacific	1.25	1.21	1.11	.92

9. The procedure used was factor analysis. Several forms were used. The most appropriate appeared to be principal factor without iteration. The resulting normalized weights for the five measures are .22176, .20827, .22372, .25703, and .23167, respectively. This factor accounted for 76.2 percent of the total variance in these measures.

10. It has a correlation with the composite of .96.

11. The norm N for a district in the i^{th} size category with a proportion p elementary enrollment was defined as $N = A_i + B_i (p - e_i)$, where A_i is the average resource level, B_i is the average resource level in elementary districts minus the average in secondary districts, and e_i is the average proportion elementary enrollment in districts in the i^{th} size category.

12. The EPV data was collected by the Office of the Assistant Secretary for Planning and Evaluation and merged by the contractor with the Census/ELSEGIS file.

13. Both per-capita income and per-pupil income were included since both affect ability to pay. They are not two measures of the same quantity. Their correlation is surprisingly low: r = .34.

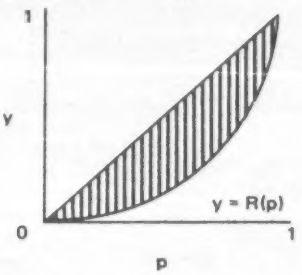
14. The initial procedure used to construct the ability-to-pay index was canonical correlation, where the first set of variables consisted of the four variables mentioned plus EPV per capita. The second set consisted of the first four resource measures and local revenue. EPV per capita contributed very little to the analyses and was deleted from the first set. This resulted in an analytically suitable index. For intuitive reasons, however, a new index was computed which proved equally acceptable analytically. It was produced by a regression of the four variables in the first set above on local revenue. The resulting normalized weights are .37454, .46501, .31605, and .13743, respectively, which produce the percentage contributions cited in the main text.

15. Initially, each center city/SMSA is assigned the value 3, each suburban/SMSA district is assigned the value 2, and other districts the value 1. This initial value is then multiplied by the percent urban population of the district. The possible score ranges for each urban type are therefore (see footnote 6):

Center City/SMSA	1.5 - 3.0
Suburban/SMSA	1.0 - 2.0
Other Urban	.5 - 1.0
Rural	0 - .5

16. To calculate the Gini index the population groups (in this case the school population in each district) are sorted in order of increasing per-pupil resource levels. The cumulative resource level r(p) up through any fraction p of the population can then be calculated simply by summing

resources in this sorted population set. If the ratio R(p) of this cumulative resource level to the total resource level r_T is plotted as a function of p, it will usually produce a curve such as that shown in the figure below for $Y = R(p) = r(p)/r_T$



If all elements of the population were receiving exactly the same per-pupil resources, the resulting curve would actually be a straight diagonal line such as that shown at the top of the hatched area in the figure. If there is any deviation from equality, the curve will fall below the straight line, leaving a gap which is shown by the hatched area in the figure. The Gini index is defined as the ratio between this hatched area and the total area under the straight line. Specifically it is given by

$$\frac{\int_0^1 P - R(p)dp}{\int_0^1 Pdp} = \int_0^1 2\ [P - R(P)]\,dp$$

17. Due to the size of the sample, all correlations greater than .038 in absolute value are significant at the 99 percent level.

18. For each State depicted, three points were plotted: the middle point has horizontal coordinate equal to the average percent poverty population in districts in each State, and vertical coordinate equal to the average resource level for districts in the 20 to 80 percentile range of poverty; the left hand point has horizontal coordinate equal to about one standard deviation less than the average poverty level for the State and vertical coordinate equal to the average resource level for districts in the 0 to 20 percentile range of poverty; the right hand point is determined similarly, based on the 80 to 100 percentile range of poverty.

19. When combining local, State, and Federal revenues, the scores in Table VI must be weighted according to the relative contribution of each of these to total revenue. The weights are, respectively, .54, .39, and .07.

20. The method was to compute the variance of the logarithm of each resource and revenue. The logarithm was used because for one district to obtain, for example, one half the average seems to entail as much inequality as for another district to obtain twice (rather than one-and-one half) the average. After the total variance is computed, each district is assigned a score equal to the average for its State, and then the variance is recomputed. This latter variance is the variance among states. The difference between it and total variance is the within-State variance.

21. The procedure is as above, except that logarithms were not used here.

22. Variations here, and correlations in the following tables, were computed after the score for each district was multiplied by a factor N/Ni, where N is the national norm and Ni is the norm of the district's State. An alternative would be an additive adjustment; i.e., add an amount necessary

to bring the state up to the national norm. The multiplicative adjustment seems more appropriate since, e.g., it preserves variation, whereas the additive adjustment does not. It should be pointed out that the procedure mentioned in the preceding two footnotes was implicitly an additive one. That was more appropriate for the purpose intended there. But this means that the figures in Tables VII and following for variation will not correspond with what would be expected on the basis of the percentages in the preceding two tables. The different purposes required different methods.

23. For this table, the deciles refer to pupils in those deciles for their State; e.g., the 0-10 deciie range refers to the aggregation over all States of the 10 percent of pupils receiving the least in their State. Thus pupils in, say, Mississippi who receive only 95 percent of the national average resources would be included in the 90-100 decile range, since they receive more than do 90 percent of pupils in Mississippi.

24. It is possible for the variance to increase after a multiplicative adjustment towards the mean; this would not be possible after an additive adjustment.

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